INFORMATION SERVICES INDUSTRY

ANNUAL EXECUTIVE PRESENTATION

1988

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San Francisco
1280 Villa Street
Mountain View, CA 94041-1194
Tel. (415) 961-3300
Fax (415) 961-3966

New York
959 Route 46 East, Suite 201
Parsippany, NJ 07054
Tel. (201) 299-6999
Fax (201) 263-8341

Washington, D.C.
1953 Gallows Road, Suite 560
Vienna, VA 22182
Tel. (703) 847-6870
Fax (703) 847-6872

International

London
Piccadilly House
33/37 Regent Street
London SW1Y 4NF, England
Tel. (071) 493-9335 Fax (071) 629-0179

Paris
52, boulevard de Sébastopol
75003 Paris, France
Tel. (33-1) 42 77 42 77 Fax (33-1) 42 77 85 82

Frankfurt
Sudetenstrasse 9
D-6306 Langgöns-Niederkleen
West Germany
Tel. (0) 6447-7229 Fax (0) 6447-7327

Tokyo
Saida Building
4-6, Kanda Sakuma-cho
Chiyoda-ku, Tokyo 101, Japan
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INFORMATION SERVICES INDUSTRY DIRECTIONS

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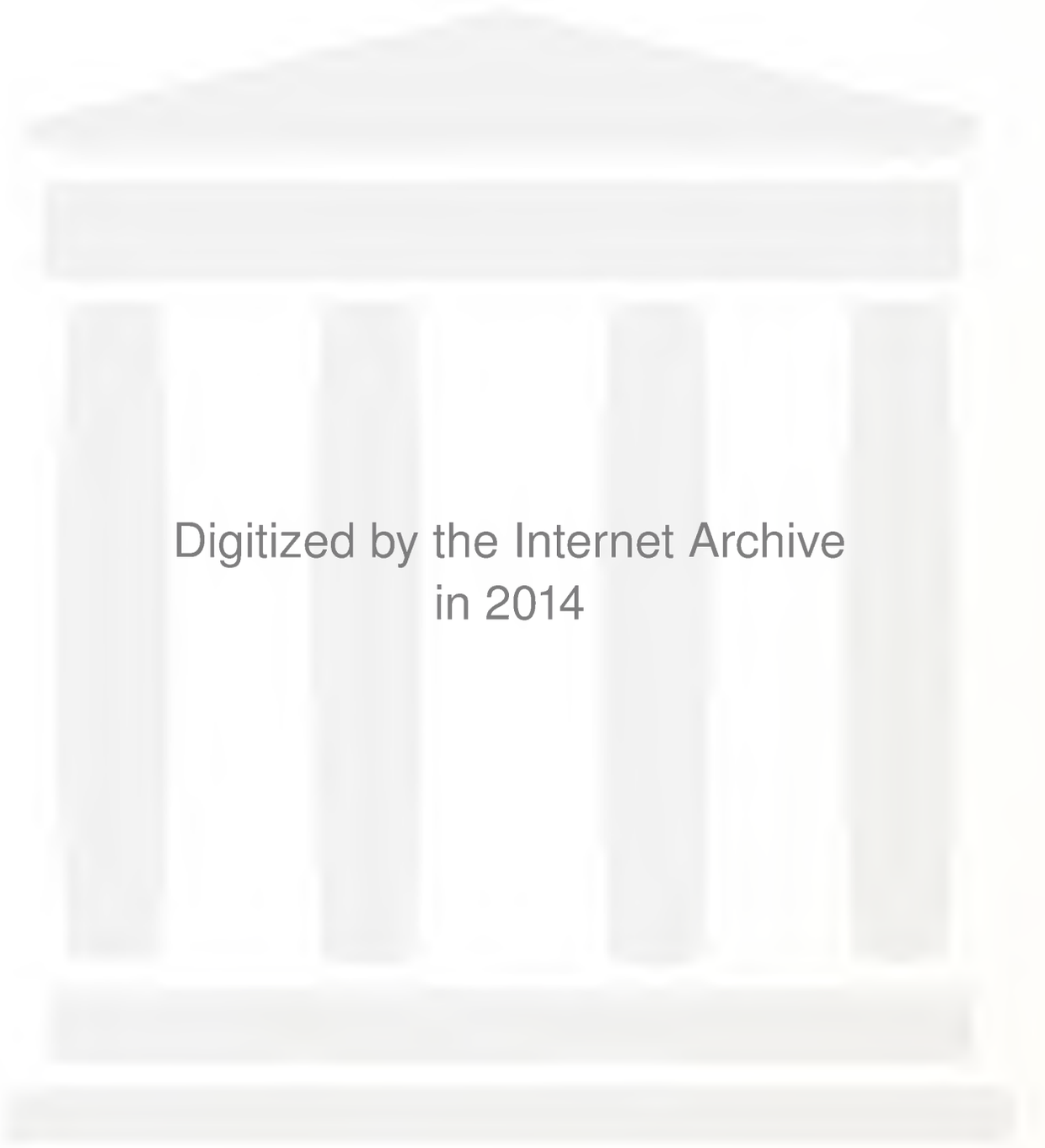
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Fundamental Driving Forces

Key Business Trends:

Shorter Product Life Cycles

More Customization/Specialization

Narrower Market Segments

Higher Impact of Technology

More Competition

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Fundamental Driving Forces

- *Apply to the Information Services Industry*
- *Are Restructuring the Role of IS*
  - Reactive to Proactive
  - Technology-Driven to User-Driven
  - Centralized To "Federated"
- *And Changing the Formula for Success*

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Information Systems—Major Issues

- Rising Management Expectations
- User Demands for Increasingly Complex Solutions
- Managing the Technology Investment
- Integration of Data/Technology/Applications
- Delivery of "Mission Critical" Systems

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Blocking Factors

- Infrastructure Gridlock
- Lack of Qualified In-House Personnel
- Existing Applications Portfolio
- Organizational Response Time

Create Opportunities for the Information Services Industry

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Information Systems Priorities—1989

- Audit the Data Management Function
- Review IS Budget Control Policies
- Review Use of External Products and Services

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Information Systems Priorities—1989

- Prepare End-User Support for the Next Wave
- Experiment with Connectivity
- Assign Responsibility for Standards

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Information Systems Priorities—Beyond 1989

- Clear Expectations of IS
- Identify Mission Critical Processes
- Application Development—Use All Alternatives

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Information Systems Priorities—Beyond 1989

- Data Management—Company-Wide Orientation
- Technology Architecture—Network Management
- Central IS—Consulting Role

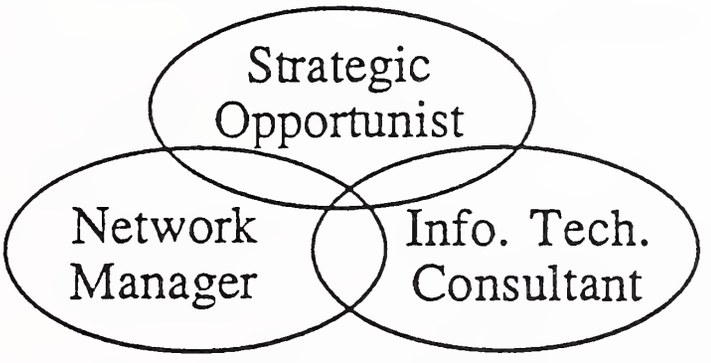
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Information Systems Executive Role in the 1990s



An Internal "Systems Integrator"

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IS Organization in the 1990s

Not Centralized

Not Decentralized

Federated

Brought together "by agreement of each party to sublimate its power to the central authority in common affairs." - Webster

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Federated IS Organization

Federal Government	Corporate IS
Defense	Competition
Treaties	Partnerships
Regulation	Standards
National Programs	Corporate Systems
National Policies	Corporate Policies

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Federated IS Organization

State Government	Unit IS
Citizens	Customers
Local Issues	Business Support
Operating Programs	Operating Systems
Policy Implementation	Policy Implementation

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IS Responsibilities—1990s

- Treat "Users" as Customers
- Analyze "Make" or "Buy" Decisions
- Consult on Strategy and Direction
- Support Organizational Units at All Levels in Use of:
  - Information
  - Information Systems and Services
  - Information Technology

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1988 User Research Activity

Questionnaire	No. Interviews	No. Industries
Budget & Issues	211	15
Application Development	103	12
Data Administration	100	11
Issues Studies	200	NA

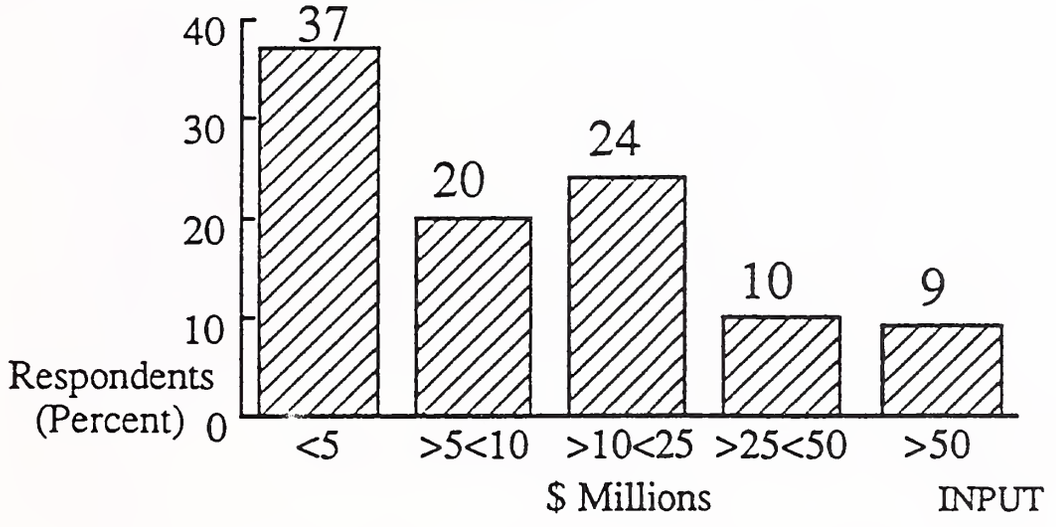
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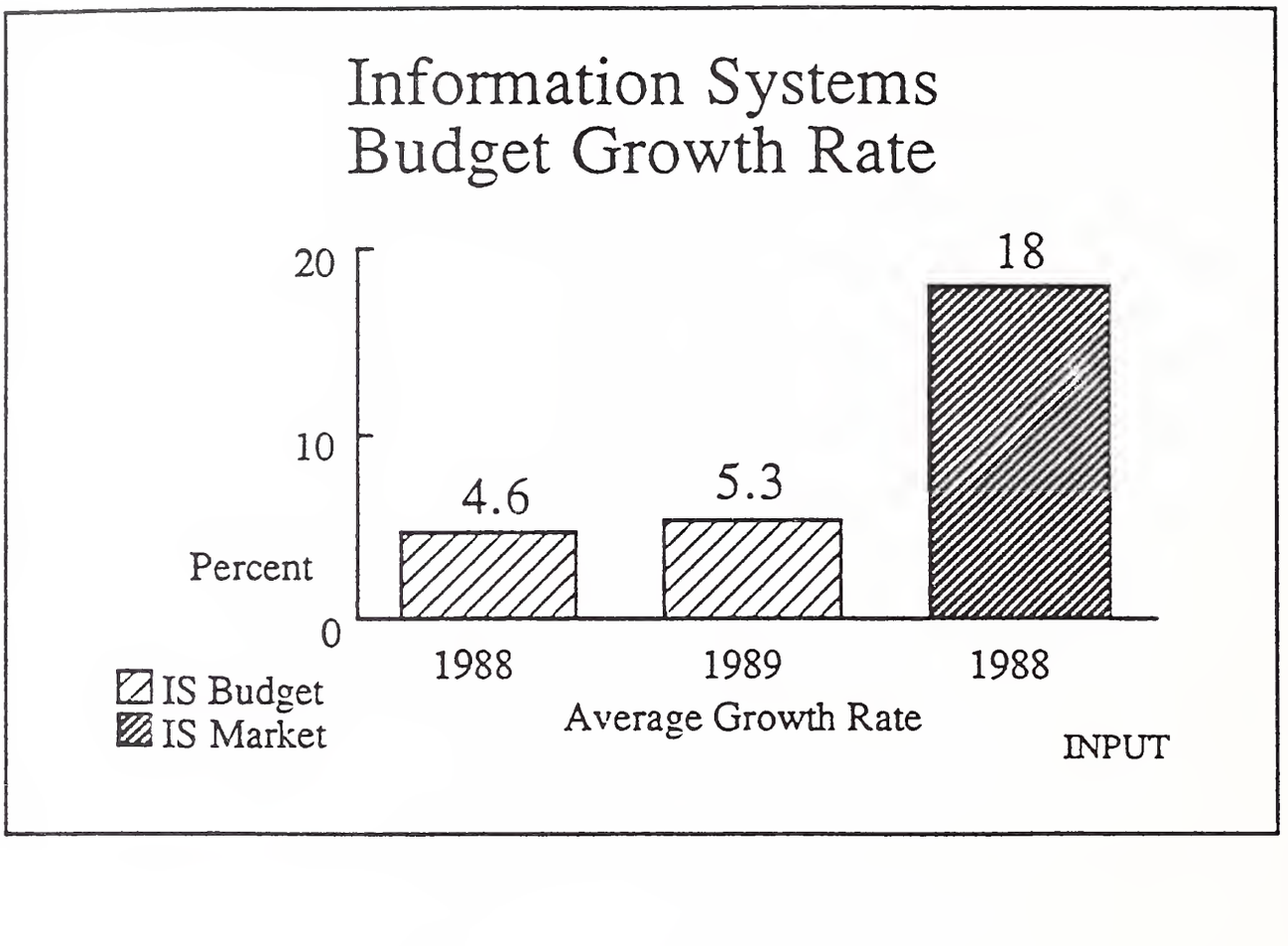
Research Demographics
Size of Information Systems Budget



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Information Systems Budget

(Percent)

Category	'87 (Dist'n)	'88 (Dist'n)	'88 (Growth)	'89 (Growth)
Personnel	40	39	2	2
Computer Hardware	28	28	5	4
Communications	11	12	14	6
Ext. Prod. & Svcs.	16	16	5	2
Other	5	5	4	0
Total	100	100	4.6	5.3

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Information Systems Major Issues—1988

- Rising Management Expectations
- User Demands for Increasingly Complex Solution
- Managing the Technology Investment
- Integration of Data/Technology/ Applications
- Delivery of "Mission Critical" Systems

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Application Development Tools

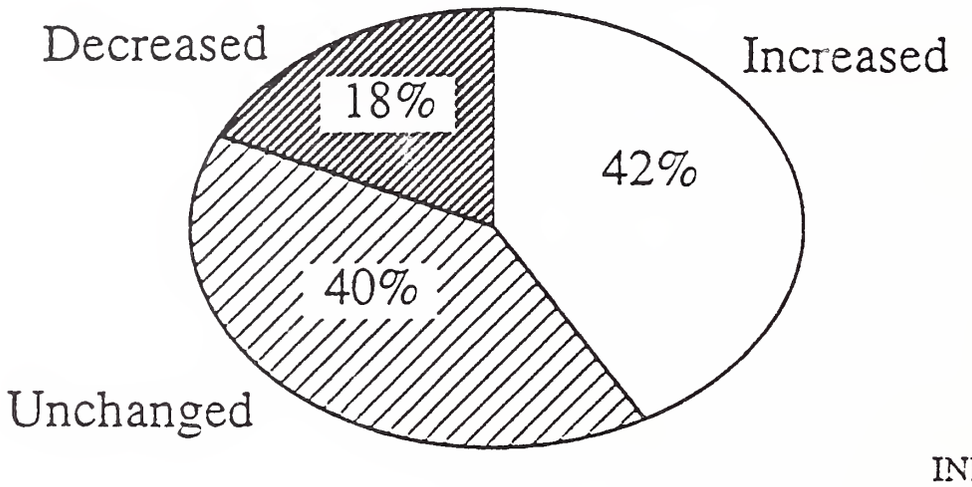
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Application Development—Backlog
1987 versus 1988
Budget & Issue Survey



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Application Development—Key Issues

Issue	Resp.
Productivity & Quality	38
Use of Technology	16
Responsiveness	14
Development Process	11

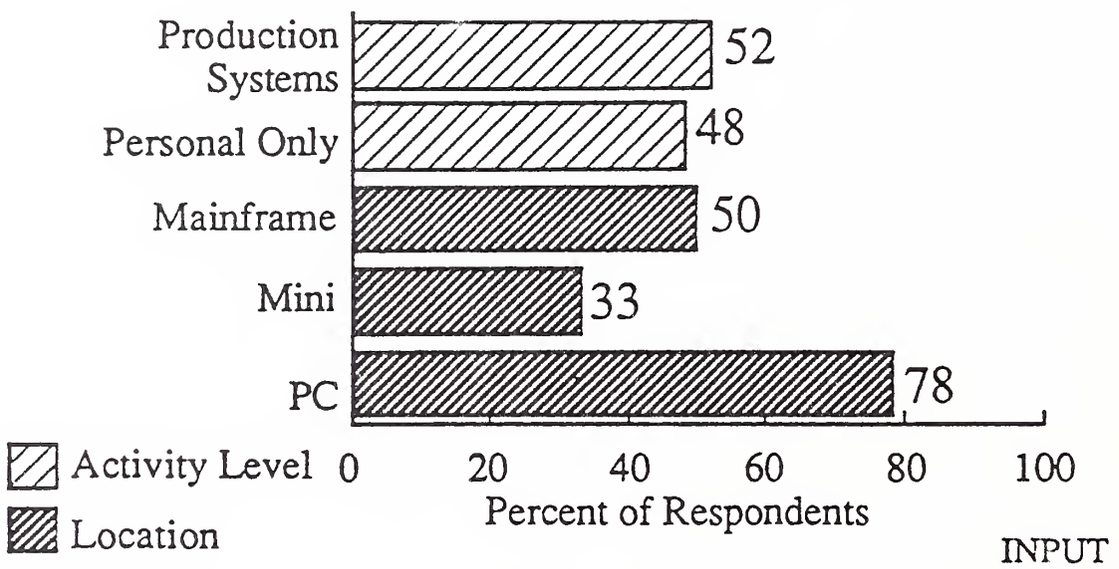
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Development by the End User



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Applications Development Summary

- Backlog Will Never Go Away
- External Resources Becoming More Common

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Applications Development Summary

- End User Becoming a Force and Alternative
- Relational DBMS Use in Full Bloom
- Data Management Will Have to Change

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User Research Findings Round Table Session

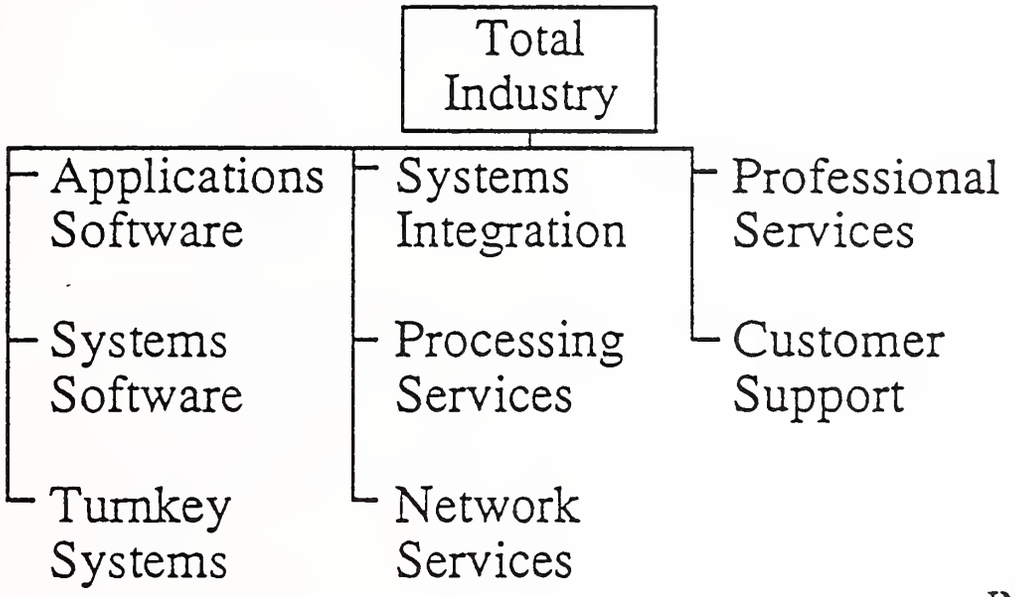
- Data Management: Current Trends and Challenges
- Systems Integration: Buyer Issues
- Workstation Strategies
- Information Systems Budget

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Information Services Industry Structure



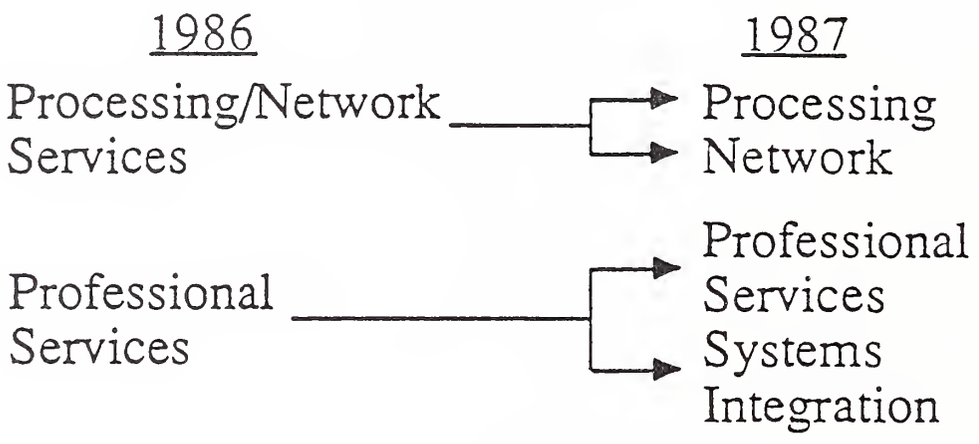
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Delivery Mode Expansion



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Delivery Mode Expansion

1986		1987
Applications Software	→	Unchanged
Systems Software	→	Unchanged
Turnkey Systems	→	Unchanged

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Vertical/Cross-Industry Markets

- "Office Systems" Category Added
- 6 Delivery Modes Forecast for Each Vertical/Cross-Industry Market
- Subcategories for Selected Verticals

Banking	Manufacturing
- Commercial Banks	- CAD/CAE
- Savings/Thrifts	- Manufacturing Control
- Brokerage	
- Other	

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Information Services
Industry Trends

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Key Trends for the 1990s

- Products & Services Markets Blurring
- Changing Market Structure
- Internationalization
- Standards
- Vendor Reactions

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Products & Services Blurring

Traditional Competitors Are Changing:

- Traditional Product Companies Adding Services
- Traditional Service Companies Adding Products (Arthur Andersen, Peat Marwick)

New Competitors Emerge with "Solution Services"

- McKesson
- AMR

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"Blurring" of Offerings Reflects
Changing Market Structure/Demand

- Systems Integration Continues to Emerge
- EDI Incorporates Multiple Products/Services
- New Technologies Will Spawn Additional Change
  - Image
  - Integrated Voice/Data
  - High-Performance Digital Communications

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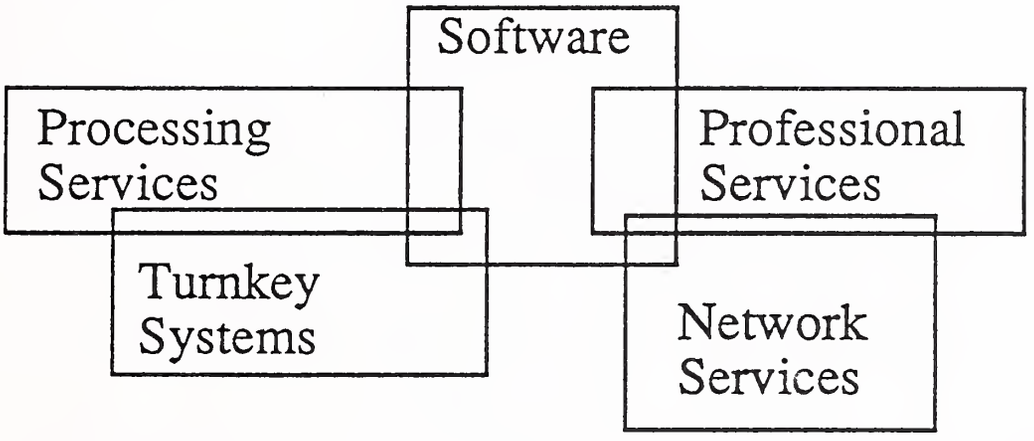
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IS Market Structure—1980s

INPUT's View



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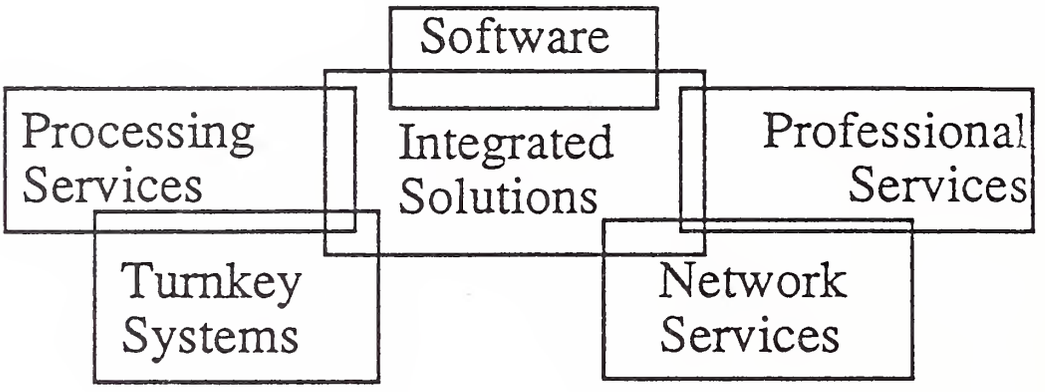
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IS Market Structure—1990s

A Different View



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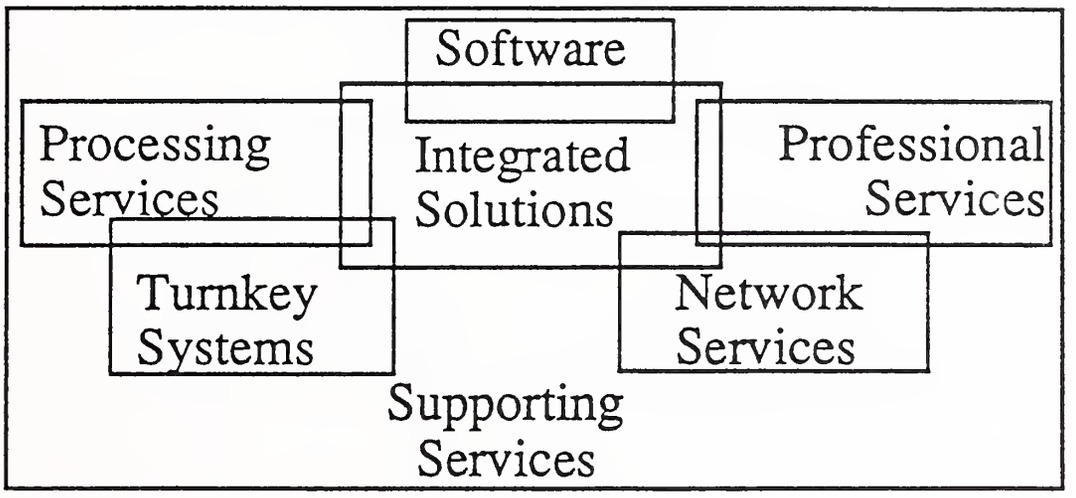
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IS Market Structure—1990s

Emphasis on Supporting Services



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Internationalization
A Dominant Trend in the '90s

- Collapsing Market Barriers
  - Europe
  - North America
- Growing Market Interest/Participation
  - Pacific Rim
- Internationalization of Buyer Requirements

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Internationalization

- Computer Manufacturers Ahead Now
- Information Services Companies Falling Behind
- Competition Coming:
  - Cap Gemini
  - Sema - Cap
  - SDL Scicon

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Standards

Driven by:

- Internationalization
- Buyer's Integration Requirements
- Dominant Providers/Coalitions

Focused on:

- Bridging the Technical Interface
- Rationalizing the Human Interface

HUMATICS ™

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Standards in the 1990s

Rationalization — Not Unification

Software — Not Hardware Driven

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Vendor Reactions

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Summing It Up

- Broadening Product Strategies
- Emphasis on "Solution" Niches
- Focus on Quality & Service

Accomplished through:

- Self-Funded Expansion
- Consolidation—Partnering/Acquisitions

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Current Examples Portend 1990s Trends

- IBM
- Oracle
- Arthur Andersen
- Computer Associates
- Digital Equipment

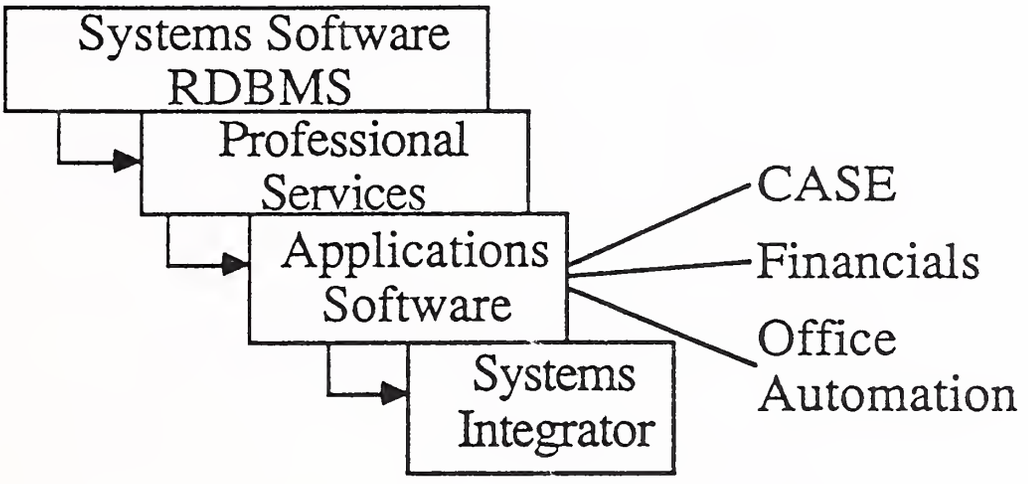
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Oracle as an Example



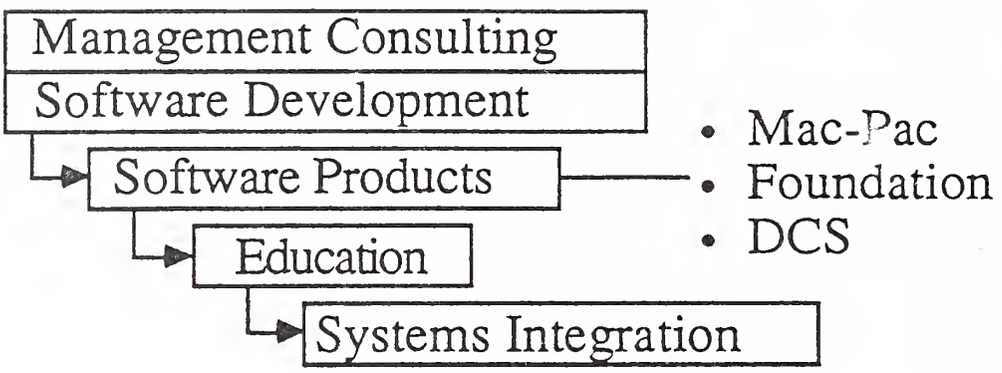
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Arthur Andersen



$1.4 Billion
13,000 Professionals

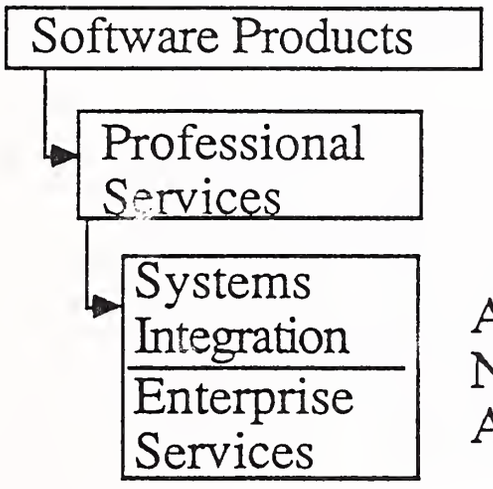
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Digital Equipment



Alliances (Apple & CIM)
Network Systems
Architecture

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Computer Associates

- Largest Software Merger - UCCEL
- Pursued Cullinet
- Made Offer for MSA
- Strategy—Growth by Acquisition
- Porting Products to DEC and Others
- Alliance with UNISYS

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Consolidation in the Industry

A Dominant Industry Phenomenon in the 1990s:

- A Smaller Number of Larger Vendors
- Providing a Broader Range of Integrated Offerings
- Supported by Smaller Niche Vendors
- Targeted at Providing Solutions

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Alliances

- Digital/Apple
- Ashton-Tate/Microsoft/SYBASE
- Relational Technology/
  Computer Task Group
- CAI/UNISYS
- IBM/Metaphor (Equity)
- CASE (Numerous)

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Conclusions

- End-Users Will Control the Major Purchase Decisions
- Systems Integration Expands as Solutions Grow in Complexity
- Internationalism Is Here
- Technology Continues to Create Opportunities

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Conclusions

- Shorter Lifecycle Calls for Fast Response
- Vendor Versatility a Key to Growth
- Everybody Needs Strategic Partners
- Services (People) Will Be the Key
  - Recruiting
  - Motivation
  - Compensation
  - Training

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Information Services Industry Forecast

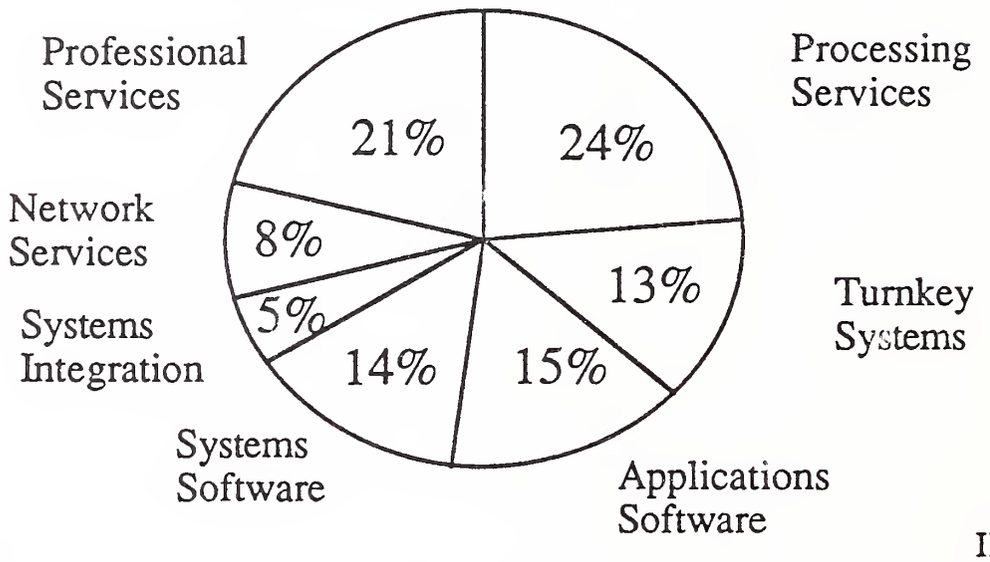
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Information Services Markets by Mode of Service—1987



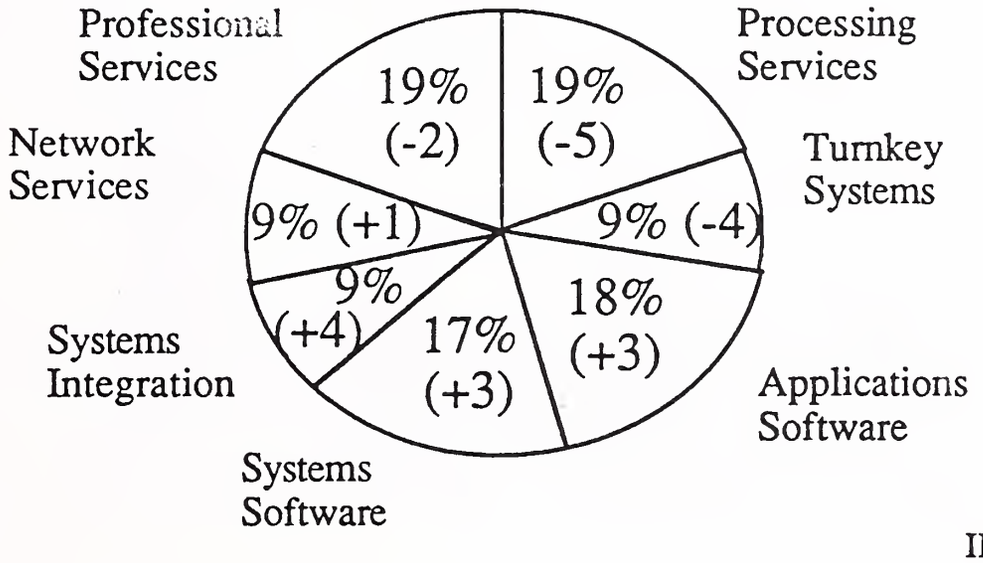
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Projected Information Services Markets by Mode of Service—1993



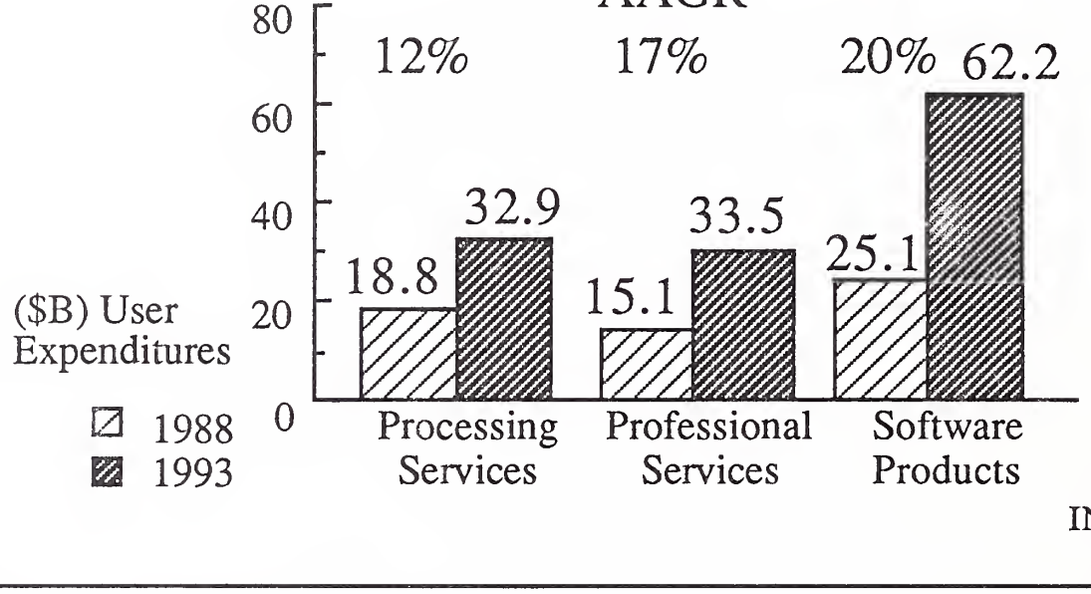
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Information Services Industry Forecast by Delivery Modes, 1988-1993



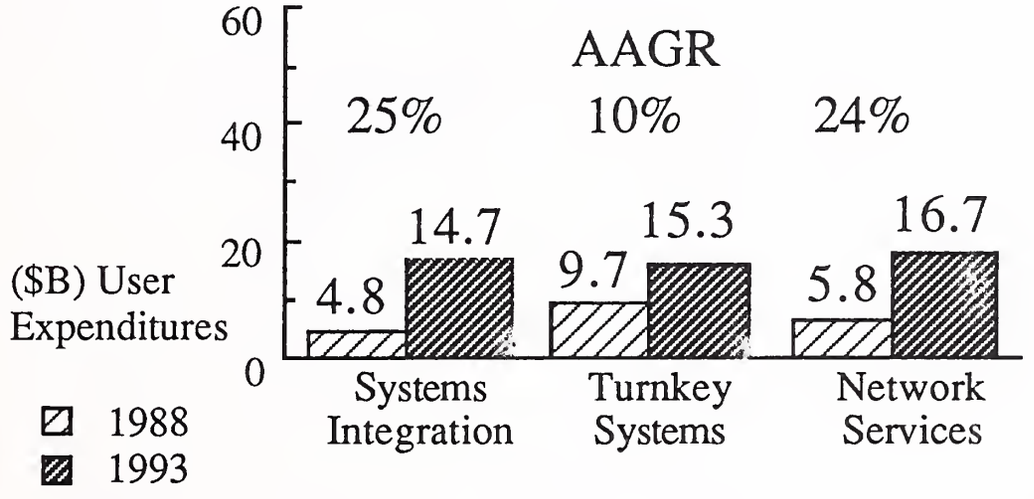
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Information Services Industry Forecast by Delivery Modes,1988-1993



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Incremental Industry Expenditures by Delivery Mode, 1988-1993

Delivery Mode	$B Added Over 5-Yr Period
Total Software	38
- Systems	20
- Software	18
Professional Services	18
Processing Services	14

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Information Services Leading Vendors

Vendors	1987 U.S. Revenues ($M)
IBM	4,841
ADP	1,384
EDS	1,296
DEC	1,138
UNISYS	1,035
CSC	960

Top Ten Vendors=21% of Industry Total

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Incremental Industry Expenditures by Delivery Mode, 1988-1993

Delivery Mode	$B Added Over 5-Yr Period
Network Services	12
Systems Integration	11
Turnkey Systems	6
Total	99

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Information Services Leading Vendors

Vendors	1987 U.S. Revenues ($M)
McDonnell Douglas	852
CDC	840
Arthur Anderson	806
TRW	651

Top Ten Vendors=21% of Industry Total

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Information Services Leading "Pure IS" Vendors

Vendors	1987 U.S. Revenues ($M)
ADP	1,384
EDS	1,296
CSC	960
Intergraph	641
Lotus	395
Shared Medical	391

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Information Services Leading "Pure IS" Vendors

Vendors	1987 U.S. Revenues ($M)
Computer Associates	389
BDM Int'l	307
Microsoft	239
Compugraphics	220
MSA	199

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Software Products

Systems Software	Applications Software
• Mainframe	• Mainframe
• Mini	• Mini
• Micro/Workstation	• Micro/Workstation

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Software Products

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User Needs

- Application Sophistication
- Heterogeneous Hardware/Environment
- Dynamic Connectivity/Cooperative Processing
- Resource Sharing/Groupware
- Productivity: User and Programming
- Workstation Support
- Image Processing

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Technology Impacts

- New Platforms/Devices
  - AS/400, PS/2, Parallel Processors, Supercomputers
- Networking/LANs
- Improved Resources
  - Memory, Storage, MIPS
- On-Line Transaction Processing

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Technology Impacts

- Operating Systems
  - UNIX, Pick, OS/2, MS/DOS
- Server/Client Relationships
- Cooperative Processing

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Business Environment

- Standards
- Taxation
- Object Code: Source Code
- Licensing
- Lawsuits
- Cooperation
- Market Mix

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Market Forecast

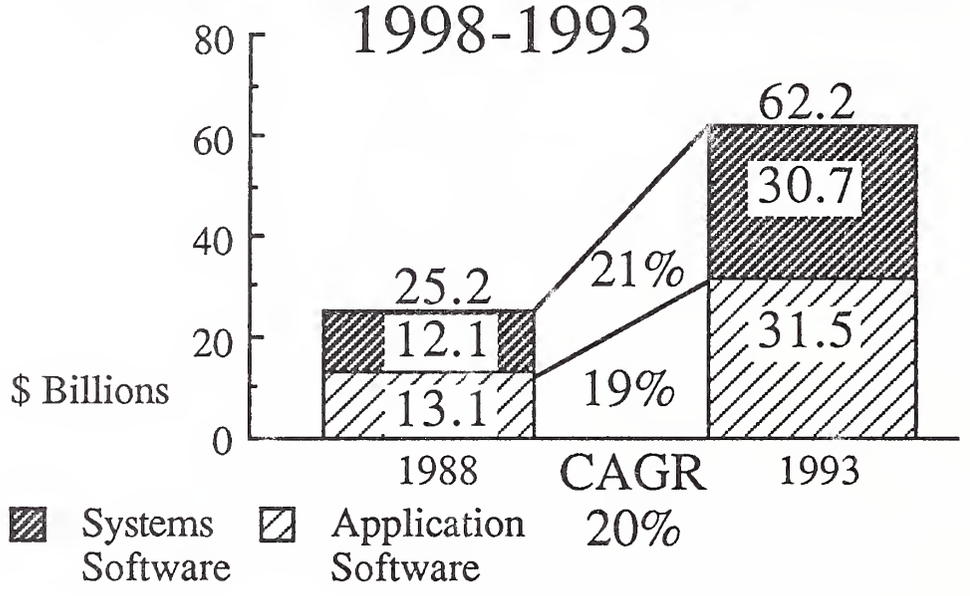
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Software Product Expenditures 1998-1993



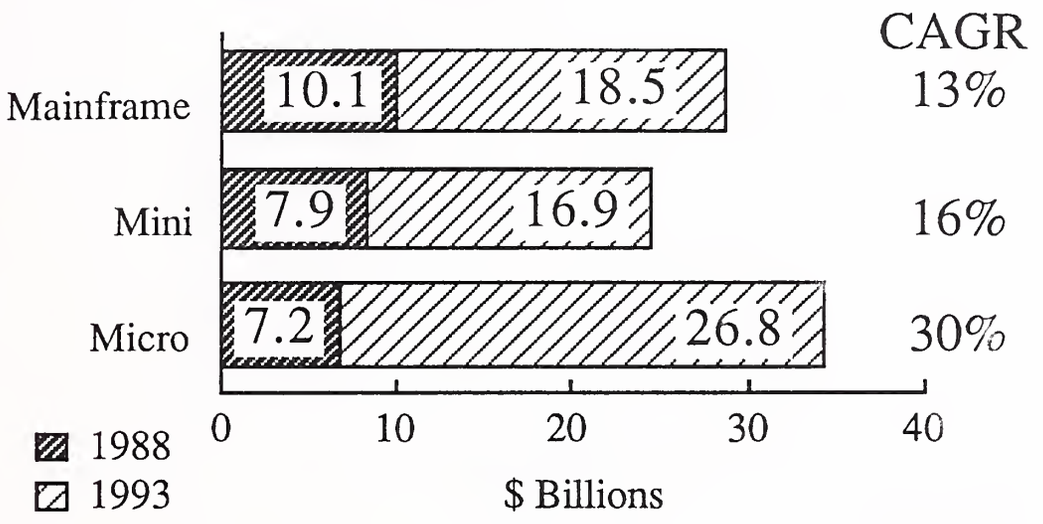
INPUT

NOTES:

MAAP-3

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Total Software Products Market Forecast by Platform Type 1988-1993



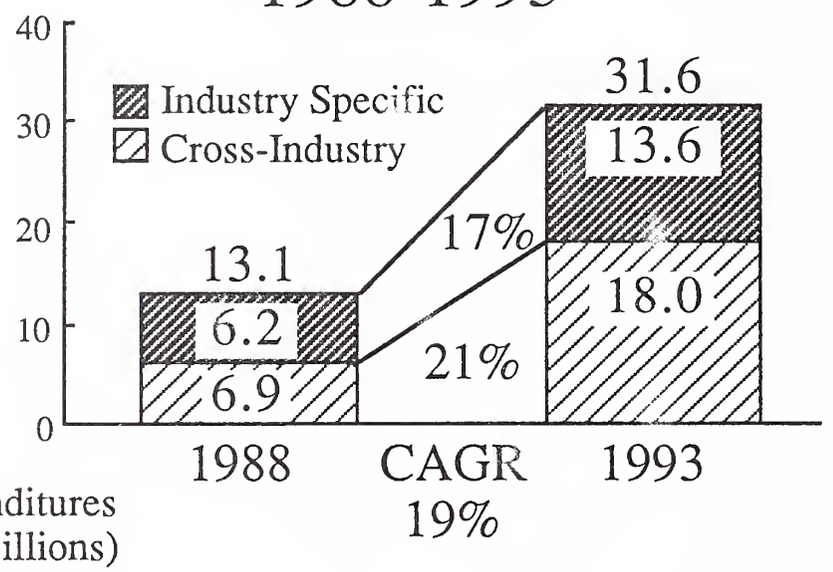
INPUT

NOTES:

MAAP-13

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Applications Software Market Submodes 1988-1993



User Expenditures
($ Billions)

INPUT

NOTES:

MAAP-4

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Applications Software Products Market—Driving Forces

- CPU Population Growth
- Standards
- Workstation Power
- Industry-Specific Thrusts
- EIS/Other Emerging Niches
- Application Complexity

INPUT

NOTES:

MAAP-5ab

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Systems Software Products Market—Driving Forces

- Staging for New Applications Software Growth
- Data Center Management Tools
- RDMS
- SAA

INPUT

NOTES:

MAAP-11a

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Systems Software Products Market—Driving Forces

- Cooperative Processing
- Image Processing
- CASE/4GL
- Standards (SQL/UNIX)
- Consolidation

INPUT

NOTES:

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IBM Actions
-Major-

- New Line of Business:
  Applications Solutions
- AS/400 Midrange System
  - 1st SAA Announcement
  - Software Announcement
  - Applications

INPUT

NOTES:

JJ88-DW2-25a

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IN

IBM Actions
-Major-

- OS/2 and OS/2E
- Applications Systems Division (ASD)
  - Started Summer of 1987
  - AS/400 Announcement
  - Internal and External Responsibility

INPUT

NOTES:

JJ88-DW2-25b

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SAA

- Single Most Important Event Unfolding in Software Products Market

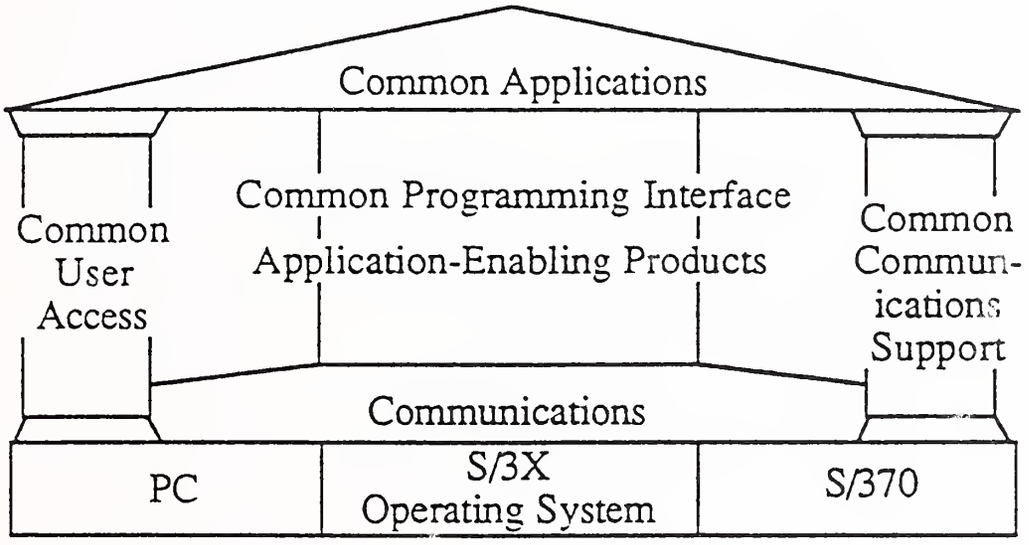
INPUT

NOTES:

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SAA—What Is It?



INPUT

NOTES:

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SAA—Issues

- Impact on Software Industry
- User Acceptance/Benefits
- Impact of ASD
- Marketing Hype?
- Capability Shortfalls
- Hardware Independence

INPUT

NOTES:

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SAA—When?

Official Announcement	3/17/87
Marketing Efforts	Continuous
Hardware Platforms	
PS/2: O/S 1.1	3Q88
S/3X (AS/400)	2Q88
S/370	4Q89*
S/? (Next System)	4Q90*

* INPUT Estimate

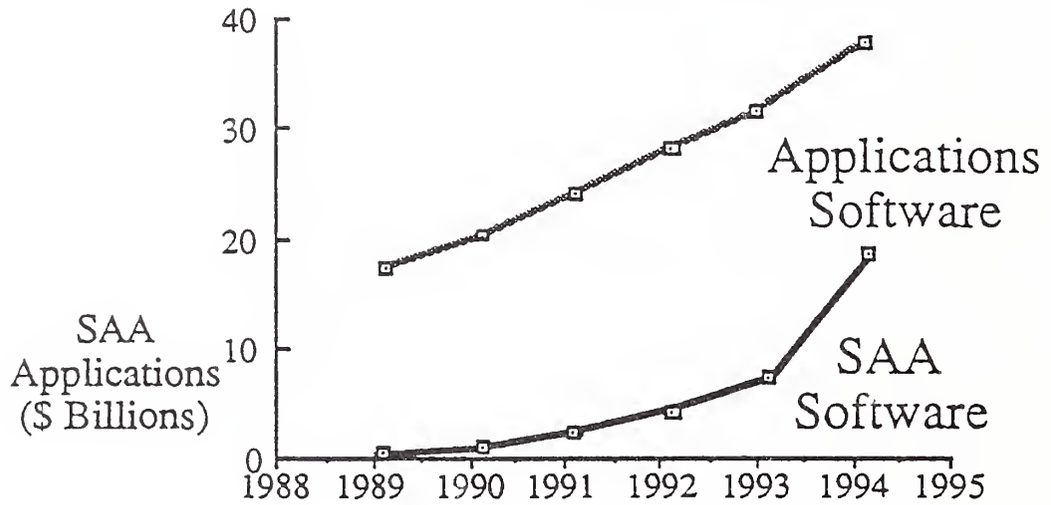
INPUT

NOTES:

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SAA—Applications Revenue



INPUT

NOTES:

JJ88-DW2-32b

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IN

SAA—Conclusions

SAA Will:

- Drive Product Consolidation
- Be a User Requirement
- Drive New Applications/Products
- Drive Software Pricing
- Reshape the Software Industry

INPUT

NOTES:

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Open Software Foundation
-Formation-

Background

- Sun/AT&T Form Strategic Relationship
- Other UNIX-Oriented Vendors Band Together

INPUT

NOTES:

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Open Software Foundation
-Formation-

Result

- Not-for-Profit Group
- Seven Original Founders
  - Apollo, Groupe-Bull, DEC, HP, IBM, Nixdorf, Siemens
- $13.5M over 3 Years for Sponsors
- $25K/Year for Associates

INPUT

NOTES:

JJ88-DW2-35b

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Open Software Foundation

- Rival Group: Archer
  - AT&T
  - Sun
  - UNISYS
  - NCR
- Two UNIX Standards Could Develop

INPUT

NOTES:

MAAP-16

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Mergers/Acquisitions

- Broadview Analysis for 1987
  - 358 Deals—Up 17%
  - $4.9 Billion
  - Largest CAI/UCCEL @ $830 Million
- ADAPSO/Broadview Index
  - 1st Half 1988
  - 190 Deals
  - $5.4 Billion

INPUT

NOTES:

JJ88-DW2-38

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Mergers/Acquisitions
-Examples-

- Informix/Innovative
  DBMS Office Automation
- IBM/Spectrum
  Mfg. Network Mgmt.
- Ashton-Tate/Ann Arbor Softworks
  PC Software Desktop Publishing
- Software Publishing/Office Solutions
  PC Software Word Processing

INPUT

NOTES:

JJ88-DW2-39a

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Mergers/Acquisitions
-Examples-

- 3Com/Communications Solutions
  LAN Communications
- Apple/Orion Network Systems
  /Network Innovations
  Mfg. Communications
- Nynex/AGS Computers
  RBOC Prof. & Software

INPUT

NOTES:

JJ88-DW2-39b

Alliances

- CASE Vendors
  - Front-End/Back-End
- Relational Technology/Computer Task Group
  /Westinghouse
- Cullinet/SHL Systemhouse

INPUT

NOTES:

JJ88-DW2-40a

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Alliances

- CAI/Unisys
- Sybase/Neuron, National InfoSys, SPSS, V.I. Corp.
- Ashton-Tate/Microsoft/Sybase
- DEC/Apple
  Network Innovations — Oracle, Sybase

INPUT

NOTES:

JJ88-DW2-40b

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New/Hot Areas

- CASE
- AI—Rejuvenated
- Data Center Management
- UNIX—All Functionality
- Image Processing
- DSS/EIS

INPUT

NOTES:

JJ88-DW2-41

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AI—Revisited & Rejuvenated

- New Players
  - Neuron Data, Natural Language
- Old Players
  - Teknowledge—Withdraws Direct Marketing
  - Language Group—Niche Oriented
  - Intellicorp—Major Agreement with IBM

INPUT

NOTES:

JJ88-DW2-42a

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AI—Revisited & Rejuvenated

- Front-End Applications
  e.g., ADR's—Mindover
  Verity—Text Retrieval
  etc. . .

INPUT

NOTES:

JJ88-DW2-42b

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Fast-Growing Software Vendor—Oracle

- Core Business: RDBMS
- New Emerging Areas:
  - Professional Services
  - Financial Products
  - Office Automation*
  - Systems Integration
  - Education and Training
  - VAR Channels

* Not Yet Announced

INPUT

NOTES:

JJ88-DW2-43

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CASE
(Computer-Assisted Systems Engineering)

Market and Opportunity

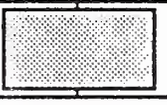
INPUT

NOTES:

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CASE Opportunity
Software Crisis

Software Development

	In-House		Products	
	Small	Large	Small	Large
Systems Software				
	Small	Large	Small	Large
Applications Software				

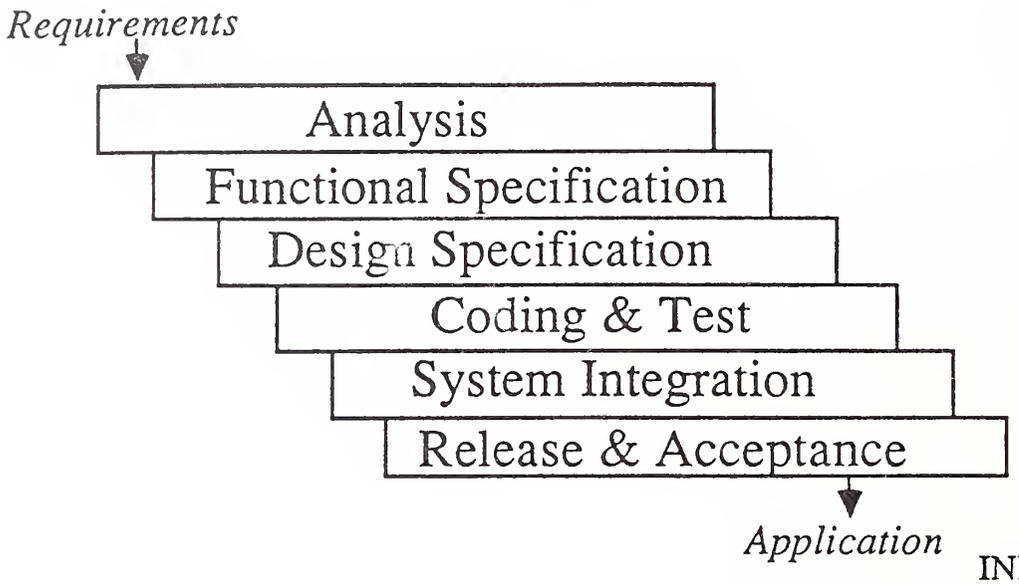
INPUT

NOTES:

JJ88-DT4-5

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Development Lifecycle
The CASE Opportunity



INPUT

NOTES:

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CASE - User Perspective

- Backlog Problem Not Improving
- Productivity Problem Real
- Concern About Discipline Requirements
- Cautious About CASE

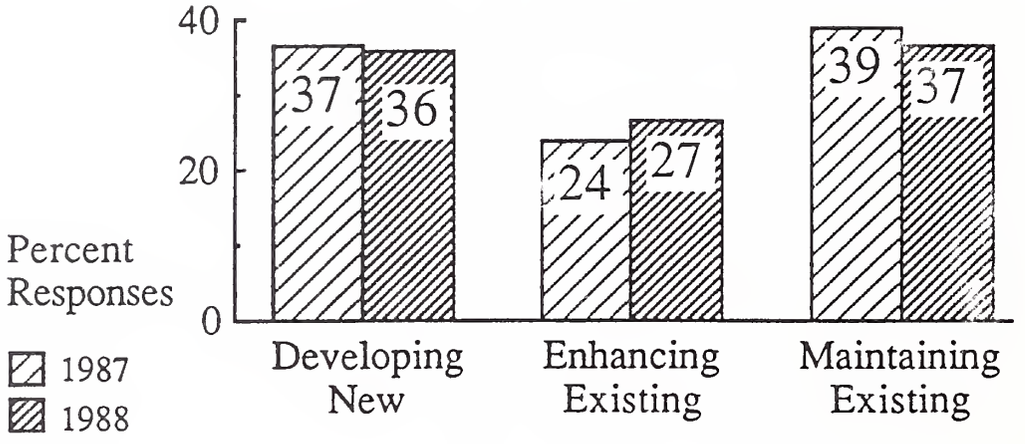
INPUT

NOTES:

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Application Development Resources: Allocation of Internal Resources



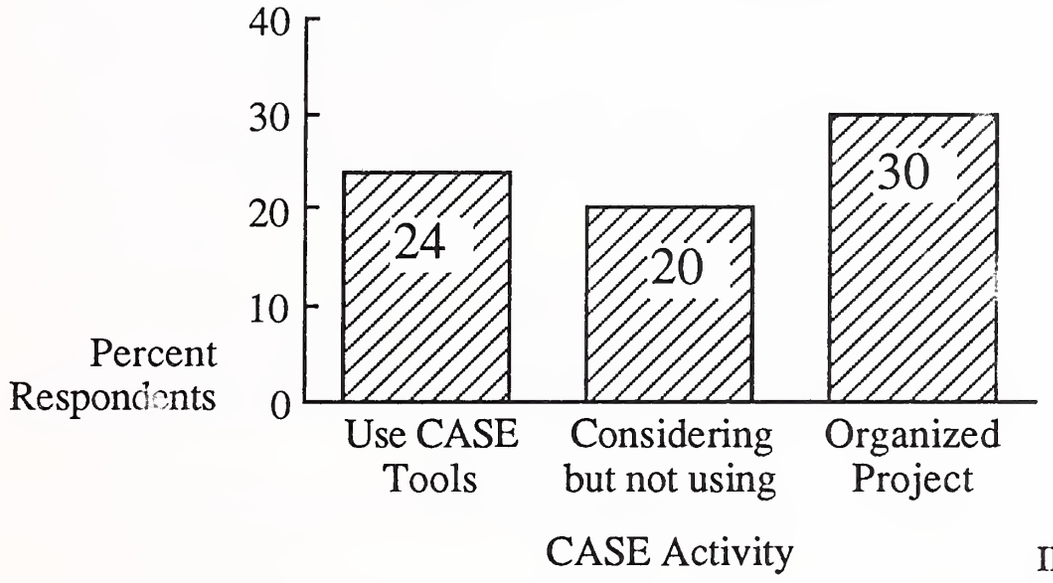
INPUT

NOTES:

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User Perspective
Activity with CASE



INPUT

NOTES:

JJ88-DT4-14 (Rev. for MAAP)

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CASE—User Perspective Summary

- Real Productivity Problem
- Lingering Resistance to Disciplined Development Processes
- Two Problems
  - Existing Applications - 2/3rds
  - New Development - 1/3rd
- Slow to Become Systems Engineers

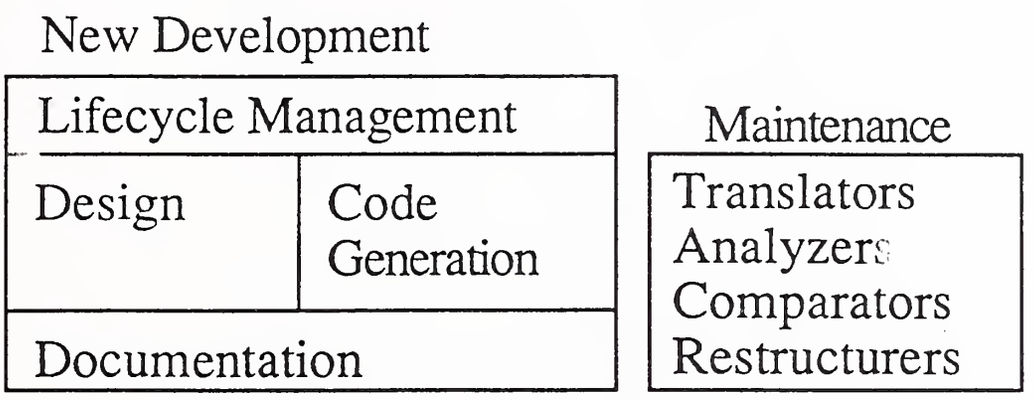
INPUT

NOTES:

JJ88-DT4-15A,B

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CASE Tools



INPUT

NOTES:

JJ88-DT4-16

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Market Status

- Remains in Emerging Phase
  - 3% to 5% Penetration
  - Rapid Growth - 100% a Year for 1985-87
  - No Dominant Vendors
- User Caution
  - Pilot Versus General Use
  - Wait and See Attitude

INPUT

NOTES:

JJ88-DT4-22

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Market Status

- Large Vendor Population
  - 40+ Active & 40+ Announced Vendors
  - Potential of Hundreds
- New Entries Likely
  - IBM—No Announced Product
  - 4GL & DBMS Vendors
  - Professional Services Vendors

INPUT

NOTES:

JJ88-DT4-24

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Vendor Alliances
Professional Services-
Front End

Arthur Young	KnowledgeWare
Coopers & Lybrand	NASTEC
Deloitte Haskins & Sells	Index Technology

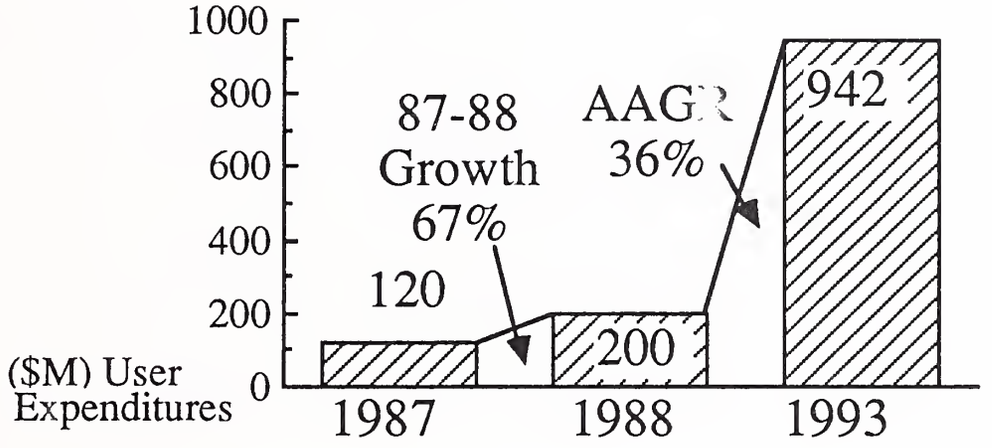
INPUT

NOTES:

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CASE Market Forecast, 1987-1993
Front-End Usage Expenditures



INPUT

NOTES:

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Summary & Conclusions

INPUT

NOTES:

JJ88-DW2-44

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Software Vendor Profile for Success

- Large Installed Base
- Heterogeneous Hardware Support
- Applications/Systems Product Basket
- Hardware Independence
- Strong Financial Resources

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JJ88-DW2-45

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Software Trends

- Traditional Vendors Reaching Out
  - Cullinet, McCormack & Dodge → VAX
  - CAI → VAX
- Professional Services Firms Enter
  - Arthur Andersen
  - Peat Marwick Main

INPUT

NOTES:

JJ88-DW2-46a

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Software Trends

- Processing Services Firms Enter
  - GE
- Open Systems Architecture

INPUT

NOTES:

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Turnkey Systems/ VARs

Market Forecast & Trends

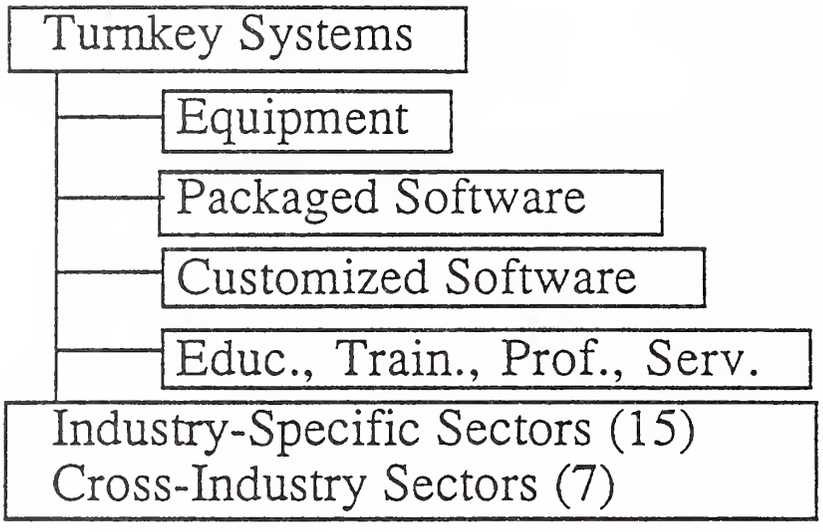
INPUT

NOTES:

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Turnkey Systems Market Structure



INPUT

NOTES:

JJ88-RG2-6

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IN

Differences Between System Integrators and Turnkey System Vendors

Systems Integrators	Turnkey Systems
Strategic Design & Consulting	Tactical Consulting
Multi-Year Effort	Single Year Time Span
High Level Complexity	Modest Complexity

INPUT

NOTES:

JJ88-RG2-5a

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Differences Between System Integrators and Turnkey System Vendors

Systems Integration	Turnkey Systems
SW Development	Software Products
High Cost	Moderate Cost
Large Project Management Skills	

INPUT

NOTES:

JJ88-RG2-5b

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Similarities Between System Integrators and Turnkey Systems Vendors

Prime Contractors Role

Multiple Vendors Involved

Equipment Delivery

Software Customization

Installation, Training, and Support

Post-Installation Support

INPUT

NOTES:

JJ88-RG2-5c

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Selected Computer Systems Vendors Turnkey Products

- IBM's SolutionPacs
- IBM's AS/400 Office
- DEC's Solution Systems
- Unisys' Purchase of Convergent, a Leading VAR

INPUT

NOTES:

JJ88-RG2-10

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Expanding Services

Provide New/Additional Services

- Consulting
- Customized Programming
- Additional Training/Education
- Data-Center Management

INPUT

NOTES:

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Vendor Strategies

Increase Typical System Size/Price

- Enhance Product Offering
- Sell Larger Systems

Expand Industry Coverage

- Related Opportunities within Current Industry
- New/Additions Industry Markets

INPUT

NOTES:

JJ88-RG2-21

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Vendor Strategies

Third-Party Application Software Developers

- Cross-Matching
  - Complements VAR Product
  - Opens New Prospects
- Cross-Industry
  - Adds Value
  - Enhances Relationship

INPUT

NOTES:

JJ88-RG2-23

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Most Successful Applications Areas for Turnkey/VARs

- CAD/CAM/CAE
- Automotive Dealer and Distribution Systems
- Health Care/Medical Systems
- Banking/Finance Processing Applications

INPUT

NOTES:

JJ88-RG2-26a

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Most Successful Applications Areas for Turnkey/VARs

- Telecommunications
- Legal Applications
- MRP Systems

INPUT

NOTES:

JJ88-RG2-26b

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Conclusions/Recommendations

- Become a Multi-Regional Turnkey Systems/VAR
- Increase Content of Industry-Specific Application Software
- Resell Proprietary Applications
- Increase Repeat Business to 50-60% Range

INPUT

NOTES:

JJ88-RG2-29a

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Conclusions/Recommendations

- Look to Installed Base as a Key Asset
- Emphasize Value-Added Services Such as Software Maintenance, Consulting, Education, and Training
- Stress Hardware and Software Add-Ons

INPUT

NOTES:

JJ88-RG2-29b

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Conclusions/Recommendations

- Increase Emphasis on Follow-On Products
- Develop Strategic Alliances
- Take Advantage of New Applications Development Tools

INPUT

NOTES:

JJ88-RG2-29c

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Conclusions/Recommendations

- Explore UNIX-Based Hardware Platforms
- Focus on On-Going Revenue Sources
- Develop Applications Around Industry Standards
- Increase Emphasis on Network Integration

INPUT

NOTES:

JJ88-RG2-29d

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SI Market Definition

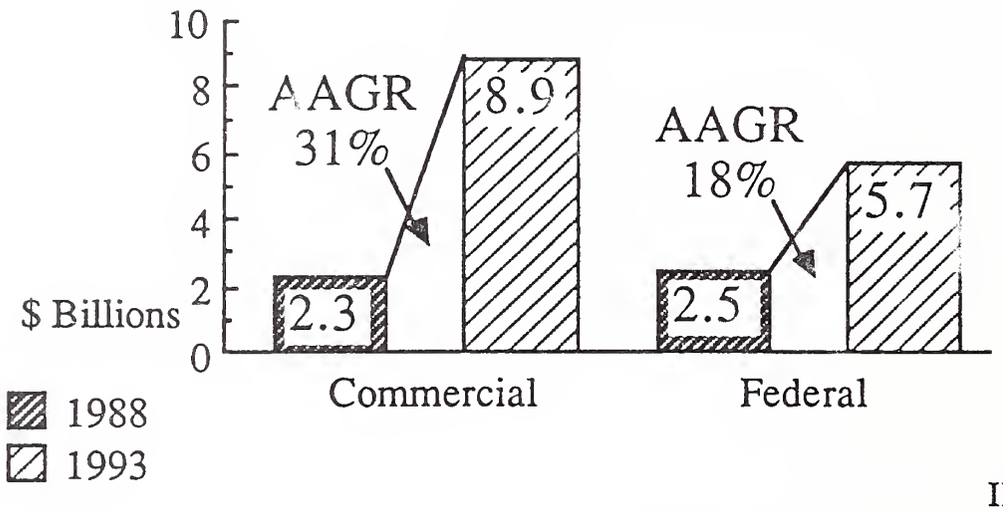
Integrated Solution to a
Multidisciplinary Information
Systems Requirement

INPUT

NOTES:

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Systems Integration Expenditures Forecast



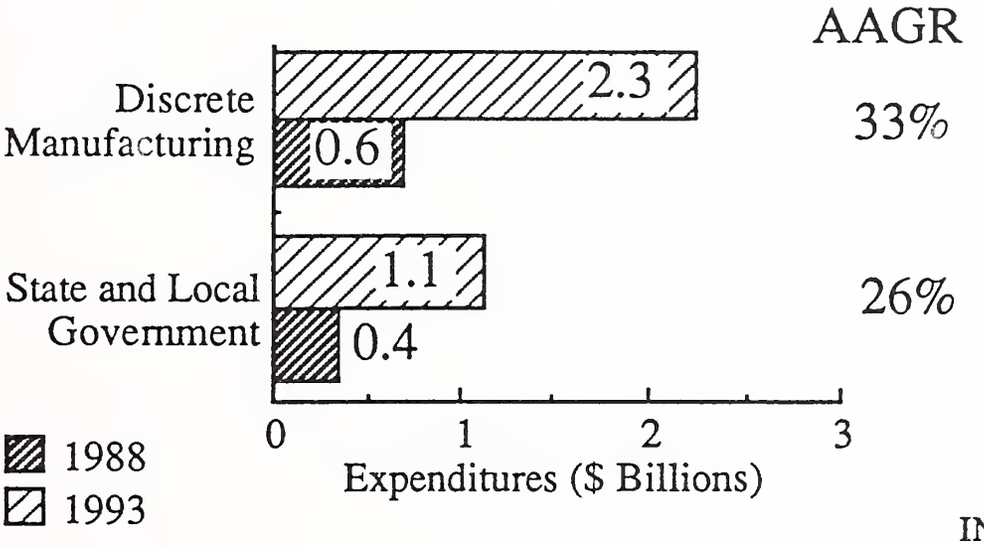
INPUT

NOTES:

JJ88-JF2-4

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Expenditures by Industry 1988-1993



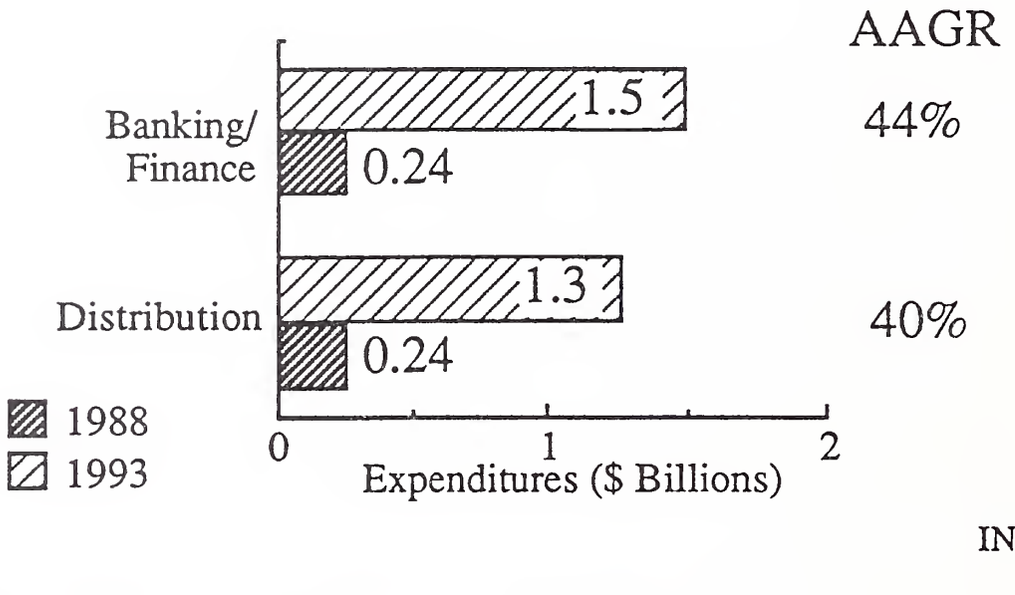
INPUT

NOTES:

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Expenditures by Industry
1988-1993



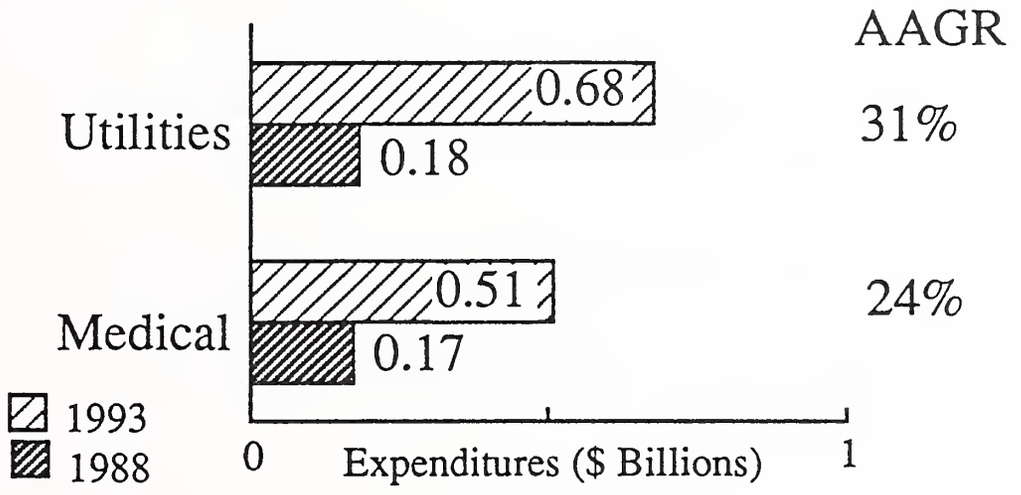
INPUT

NOTES:

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Expenditures by Industry
1988-1993



INPUT

NOTES:

JJ88-JF2-7

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Major Issues—1988

- Rising Management Expectations
- User Demands for Increasingly Complex Solutions
- Managing the Technology Investment
- Integration—Data/Applications /Technology
- "Mission Critical" Solutions

INPUT

NOTES:

JJ88-JF2-15

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Buyer Issues—Vendor Selection

- Selection Criteria/Process
- Environmental/Organizational Impacts
- Project Management Issues
- End-User Perspectives

INPUT

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Technology Drivers—1988

- Relational Data Structures
- Open Systems Standards
- Multiplatform Software
- Microcomputer Sophistication
- Communications Product Range

INPUT

NOTES:

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Implications for Vendors

Trend	Implication
Buying Trends	
User Becomes Buyer	Application Emphasis
Solution Complexity	Development Emphasis

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NOTES:

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Implications for Vendors

Trend	Implication
Competitive Posturing	
Application Knowledge Critical Long Term	Major Alliances May Be Essential
Turnkey Market Weakening	May Want to Protect Key Subcontractors

INPUT

NOTES:

JJ88-JF2-28

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Implications for Vendors

Trend	Implication
Strategic Focus	
Current Growth in Technology-Based Projects	Not the Long-Term Opportunity
Vertical Focus of Major SI Competitors	Further Exposure on Profitability

INPUT

NOTES:

JJ88-JF2-29

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Systems Integration Recommendations

- Present Full-Service Image
- Leverage/Promote Proprietary Technology
- Establish Strategic Partnerships (Alliances)
- Initiate and Maintain Overall Account Control
- Maintain Project Management Continuity

INPUT

NOTES:

JJ88-JF2-30,31

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Professional Services

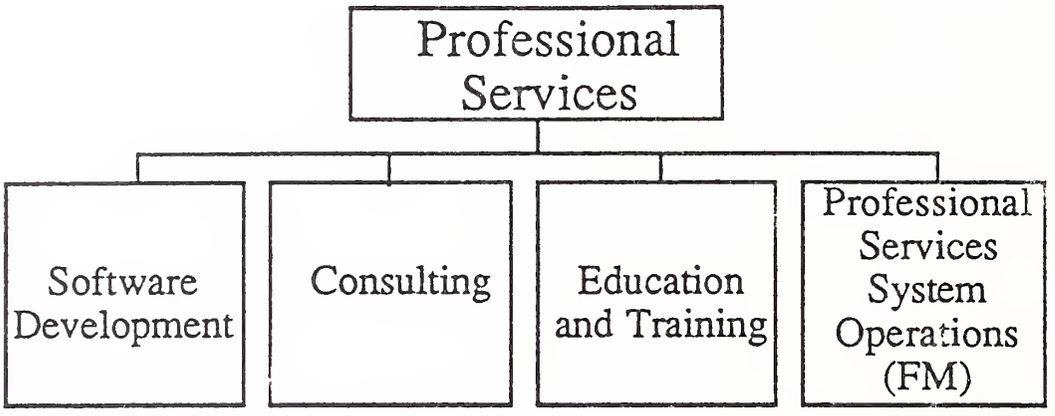
INPUT

NOTES:

JJ88-DWH-1

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Professional Services Market Structure



INPUT

NOTES:

JJ88-DWH-2

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Professional Services Market—Driving Forces

- SW/Processing/Turnkey Vendor Positioning
- Vendor Alliances
- Diminished Skilled Labor Pool
- Specialized Skill Sets
- Project Control Methodologies

INPUT

NOTES:

JJ88-DWH-8A

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Professional Services Market—Driving Forces

- Lack of IS In-House Expertise
- Rising Labor Costs
- Low-Cost Market Entry
- Systems Complexity

INPUT

NOTES:

JJ88-DWH-8B

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Major Vendors' Shares of Total U.S. Professional Services Market—1987

Company Name	Revenue ($M)	Market Share (%)
IBM	1,017	7
CSC Corp.	521	4
Arthur Andersen	437	3
Unisys Corp.	414	3

INPUT

NOTES:

JJ88-DWH-10A

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Independent Vendors' Shares of Federal Professional Services Market—1987

Company Name	Revenue ($M)	Market Share (%)
CSC Corp	464	18
Mitre Corp.	343	13
Emhart (PRC)	250	10
BDM International	249	10
Grumman	240	9

INPUT

NOTES:

JJ88-DWH-12A

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Independent Vendors' Shares of U.S. Commercial Professional Services Market—1987

Company Name	Revenue ($M)	Market Share (%)
Arthur Andersen	437	4
Arthur D. Little	285	2
TRW, Inc.	273	2
Boeing Computer Services	217	2

INPUT

NOTES:

JJ88-DWH-15A

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Independent Vendors' Shares of U.S. Commercial Professional Services Market—1987

Company Name	Revenue ($M)	Market Share (%)
Coopers and Lybrand	190	2
Computer Task Group, Inc.	162	1
Peat Marwick Main and Co.	152	1

INPUT

NOTES:

JJ88-DWH-15B

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SI Impact on Professional Service Recommendations

- Is Bigger Better?
- Large Fish/Small Pond vs. Small Fish/Large Pond
- Assess Your Own Capabilities
- Plan a Clear Direction
- Work Your Plan

INPUT

NOTES:

JJ88-DWH-25

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Big-Eight Accounting Professional Services

- Predominately Accounting/Audit
- Professional Services Faster Growing
- Entering Software Markets
  - Arthur Andersen's *Foundation*
  - Peat Marwick's *Catalyst*
- Mergers/Acquisitions/Strategic Alliances

INPUT

NOTES:

JJ88-DWH-27

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Significant Mergers/Acquisitions in Professional Services

- Emhart (Planning Research)/ Advanced Technology
- Nynex/AGS
- Ford Aerospace/BDM Intl
- Logica (U.K.)/Data Architects
- AEG (FRG)/DYNCORP

INPUT

NOTES:

JJ88-DWH-29

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Professional Services Futures

- Minor Consolidation: Merger/Acquistion of Smaller Firms
- Increased Competition for Worker Bees
- H.R. 1706 Rollback
- Off-Shore Software Development
- "Maintenance" Opportunity

INPUT

NOTES:

JJ88-DWH-31

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Opportunities and Recommendations

- Specialize in Industry Niches
- Develop Alliances within Other Delivery Modes
- Enhance Education and Training Offerings
- Follow Standards and Regulatory Processes
- Monitor New Technologies

INPUT

NOTES:

JJ88-DWH-32A,B

Processing Services

- Transaction Processing
- Utility Processing
- "Other" Processing
- System Operations
  - Vendor-Owned System
  - AKA "Facilities Management"

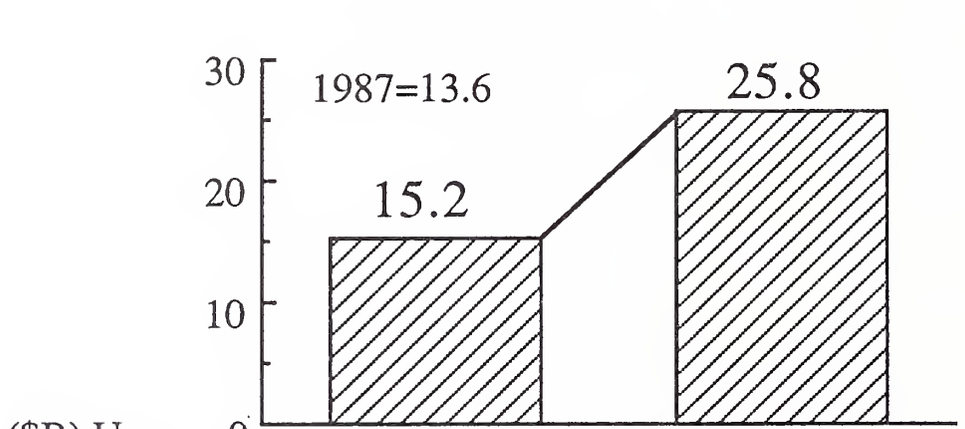
INPUT

NOTES:

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Processing Services Forecast



INPUT

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Vendor Activity

NDC

- ~~Merger with Medco~~
- Developing EDI
- Alternative Operator Services
- Credit Authorizations

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NOTES:

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Vendor Activity

McDonnell Douglas ISG

- Reorganization, Reorganization
- Lost $42.3 M in 1987

→ Systems Integration Strategy

INPUT

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Vendor Activity—
Network Leverage

AA Sabre

- Terminals ⟶ LAN Linked PS/2
- Network/Processing Service +
  Office System Sales

INPUT

NOTES:

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Utility Processing—COM

- 60-Year-Old Technology
- Moving In-house
- Anacomp—Back to Fundamentals + Com Hardware
- Endata—Acquired by FFMC

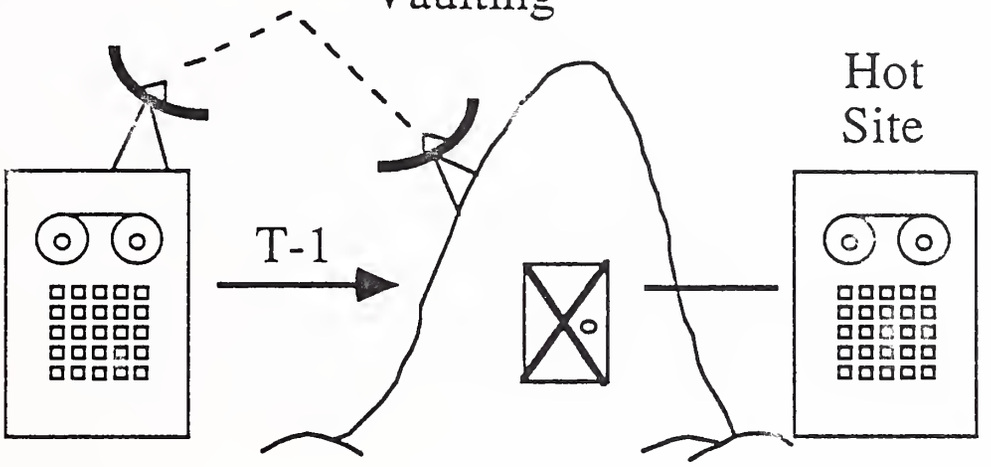
INPUT

NOTES:

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Disaster Recovery
High-Speed Electronic Vaulting



- Comdisco
- Sungard

INPUT

NOTES:

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Trends

Large Scale SI Projects



Facilities Management Contracts

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Trends

- Fixed Length Contracts are Out, Flexibility is In
- Users Become Vendors
- Ample Bandwidth Available
- Technical "Solutions" Search for "Problems"

INPUT

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Recommendations

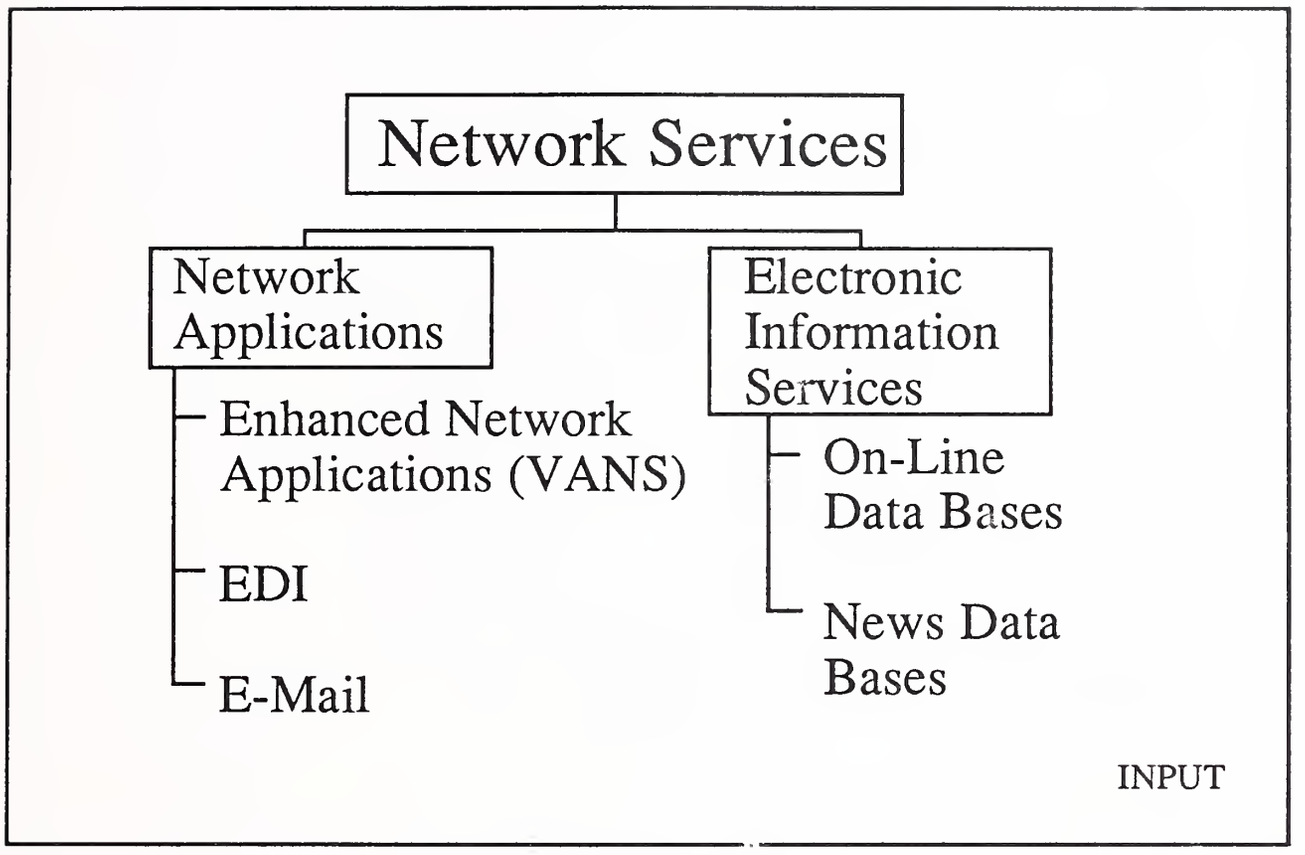
- Evaluate Role of New Technologies/ Applications
- Determine How Transmitted Data Can Be Processed
- Understand Technical Requirements for Connection between User's Operations and Your Services

INPUT

NOTES:

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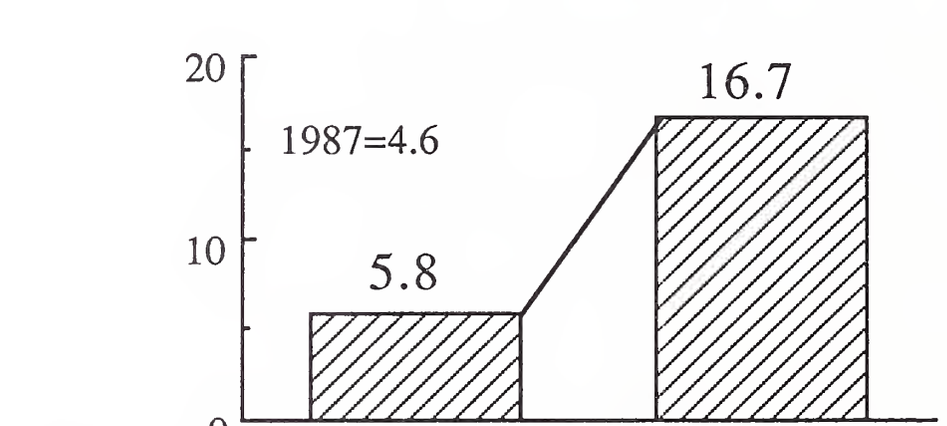


NOTES:

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Network Services Forecast



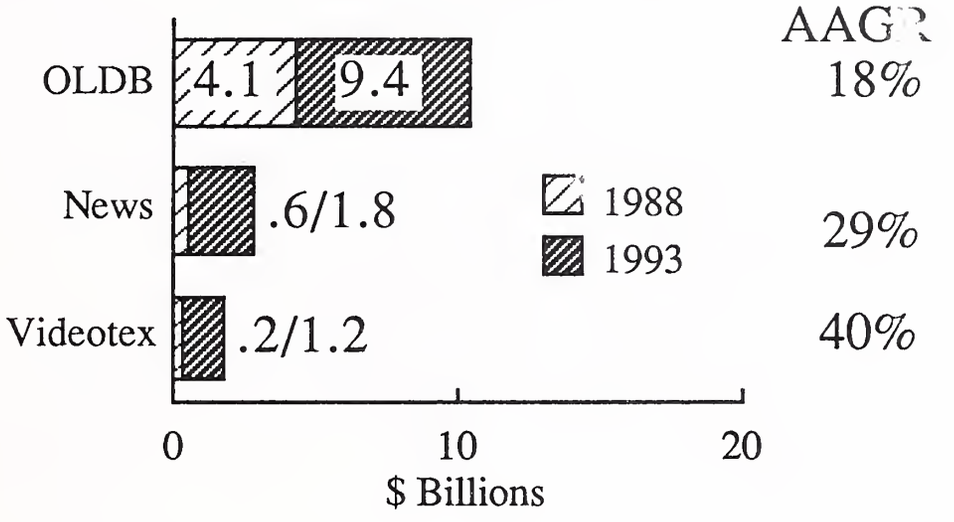
INPUT

NOTES:

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Electronic Information Services Forecast



INPUT

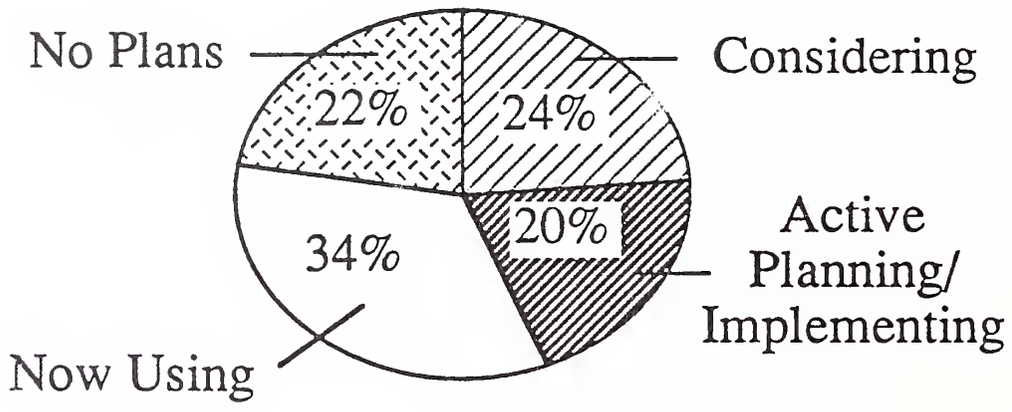
NOTES:

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Forecast Factors

EDI Status
(IS Managers)



INPUT

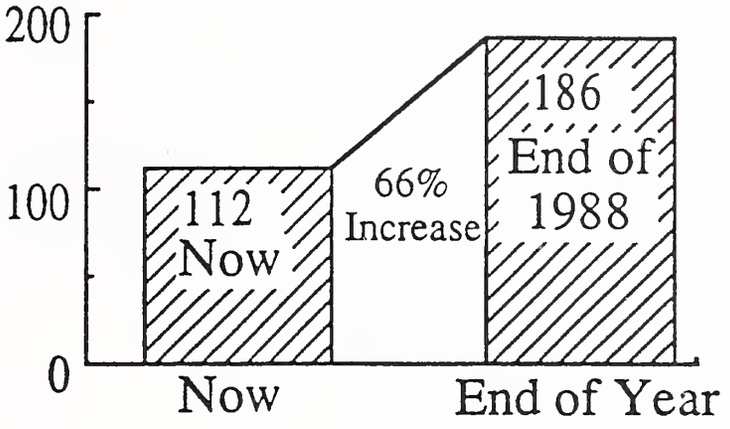
NOTES:

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Forecast Factors

Number of EDI Trading Partners



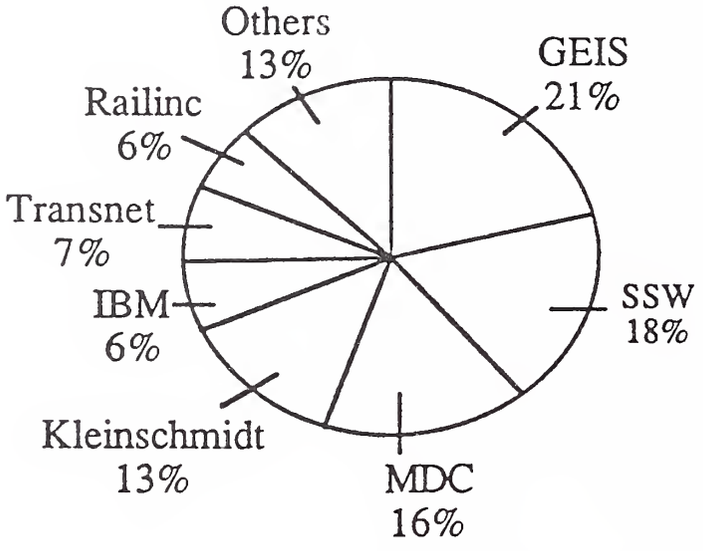
INPUT

NOTES:

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EDI Network/Processing Service Market Shares

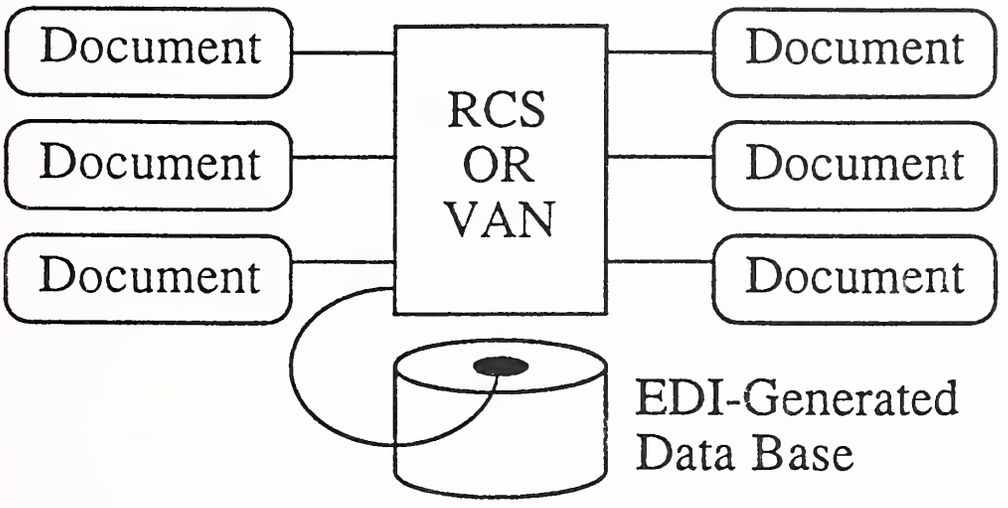


Excludes Private Networks, EMC, Interface, Federal

INPUT

NOTES:

EDI Traffic Becomes a Data Base



INPUT

NOTES:

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Vendor Activity

Shifting Ownership

U.S. Sprint & Telenet Communications

GTE ⟶ United Telecom

INPUT

NOTES:

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Trends

- OLDB Consolidation
  - Dialog/Knight Ridder
  - CSC/Equifax Credit Reports

INPUT

NOTES:

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Vendor Activity—Alliances

- CSC—European PTTs
- AT&T, BT, KDD

  "One Stop Network Services"

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OLDB Opportunity

- International Access
- Multi-Lingual, Real-Time Translation

INPUT

NOTES:

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RBOC Network Services (LADTS)

- Gateways
- Deep Pockets, Existing Plant
- Marketing Limitations

Future: CATV?

INPUT

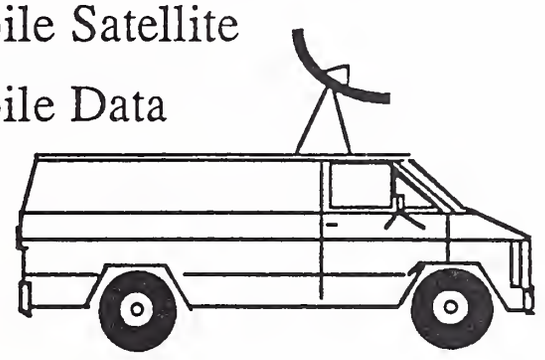
NOTES:

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Interesting Network Technologies

- Mobile Satellite
- Mobile Data



INPUT

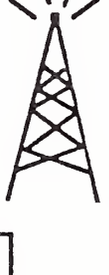
NOTES:

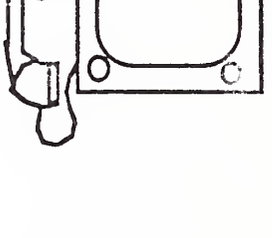
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Interesting Network Technologies

- FAX Store & Forward
- FM SCA Broadcast Data
- Video Phones





INPUT

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Network Services Opportunities

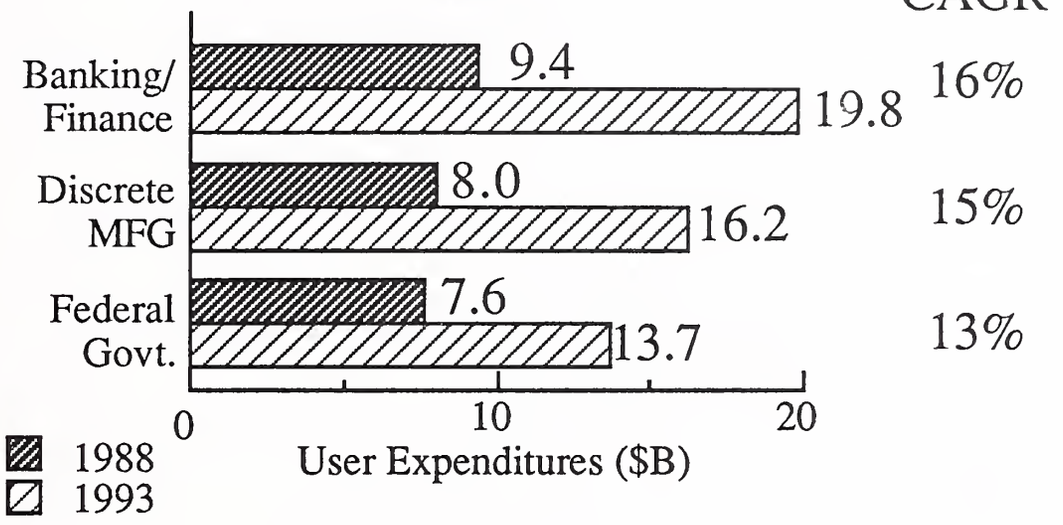
- RBOC Gateways, Services
- Network Design, Operation
- OLDB: International Access
- Multi-Lingual, Real-Time Translation

INPUT

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Largest IS Vertical Markets

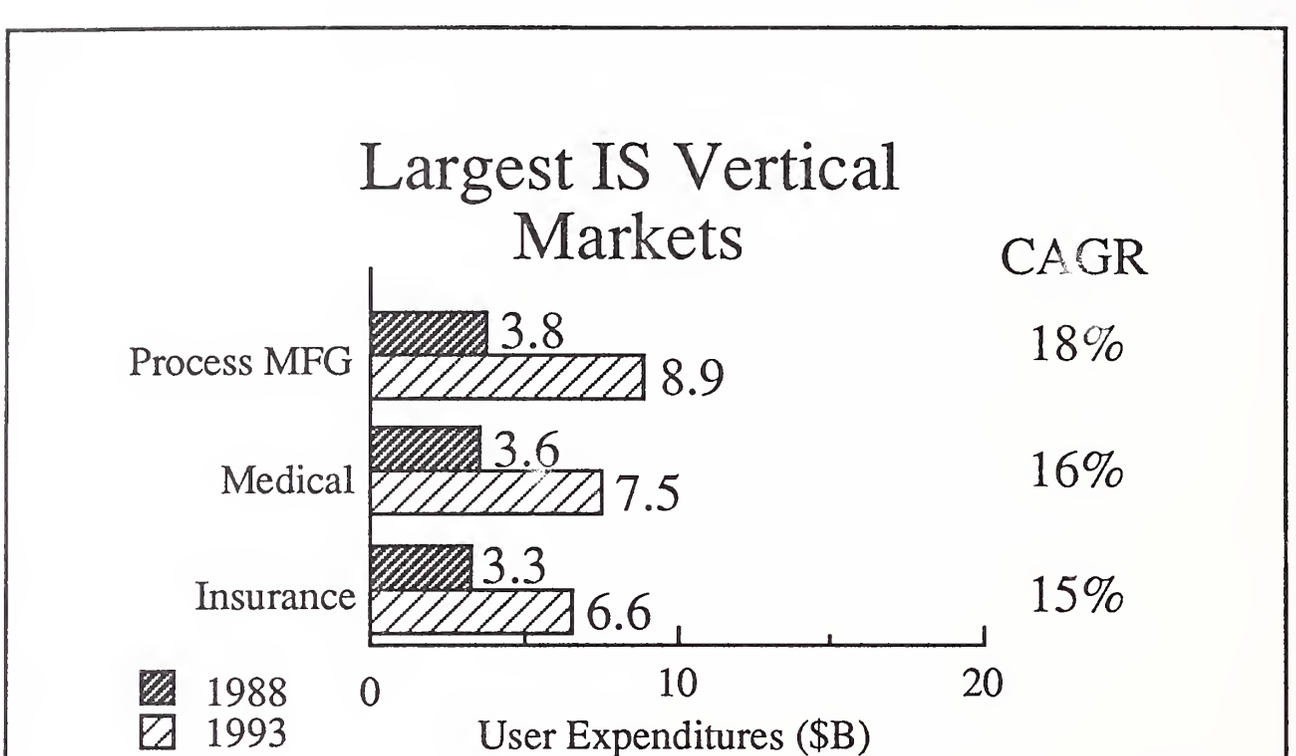


INPUT

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Trends—
Discrete Manufacturing

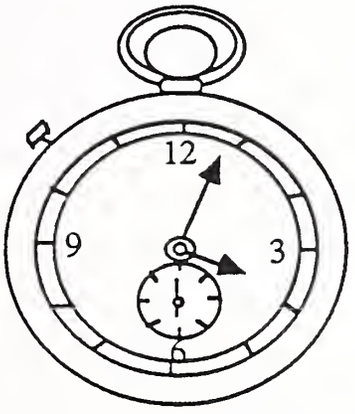
- Large Market, Still Growing at 15%
- High-End MRPII Saturation
- Micro-Based Solutions & Workstations
- Need for Integrated Systems

INPUT

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"Time—
The Next Source of
Competitive Advantage"

- HBR July/August 1988

- Attack Opportunities
- Adjust to the Requirements

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Hewlett-Packard
Recommendations for Continued Success

- Continue to Develop "Open System" Products
  - Openview (Open Systems Interconnect)
  - New Wave
  - HP-UX
  - OSF Involvement
- Target Vertical/Niche Markets
- Focus on Workstation/PC Development Tools/Environment
- Develop Transaction Processing & Relational Data Base Strengths
- Become a "Systems Integrator"
- Emphasize Professional Services
  - Education /Training
  - Consulting
  - Software Development
- Acquire Specific Software Skill Sets (Acquisition or Merger)
- Leverage VAR Position

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VAR Perspective
H-P Advantages

- Sales Force
- Customer Support
- Customer Loyalty
- VAR Support Programs
- Open Systems Philosophy
- Risc Architecture
- New Wave (Legal Problems Aside)

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VAR Perspective
DEC Advantages

- Single Architecture/Distributed Systems
- RDBMS
- Networking Capability
- Price-Performance (?)
- "Hot" Hardware

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